AD-A031 244 ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG MISS F/G 9/2
CORPS-WIDE CONFERENCE ON COMPUTER-AIDED DESIGN IN STRUCTURAL EN--ETC(U)
AUG 76 N RADHAKRISHNAN, D B MAY

UNCLASSIFIED NL

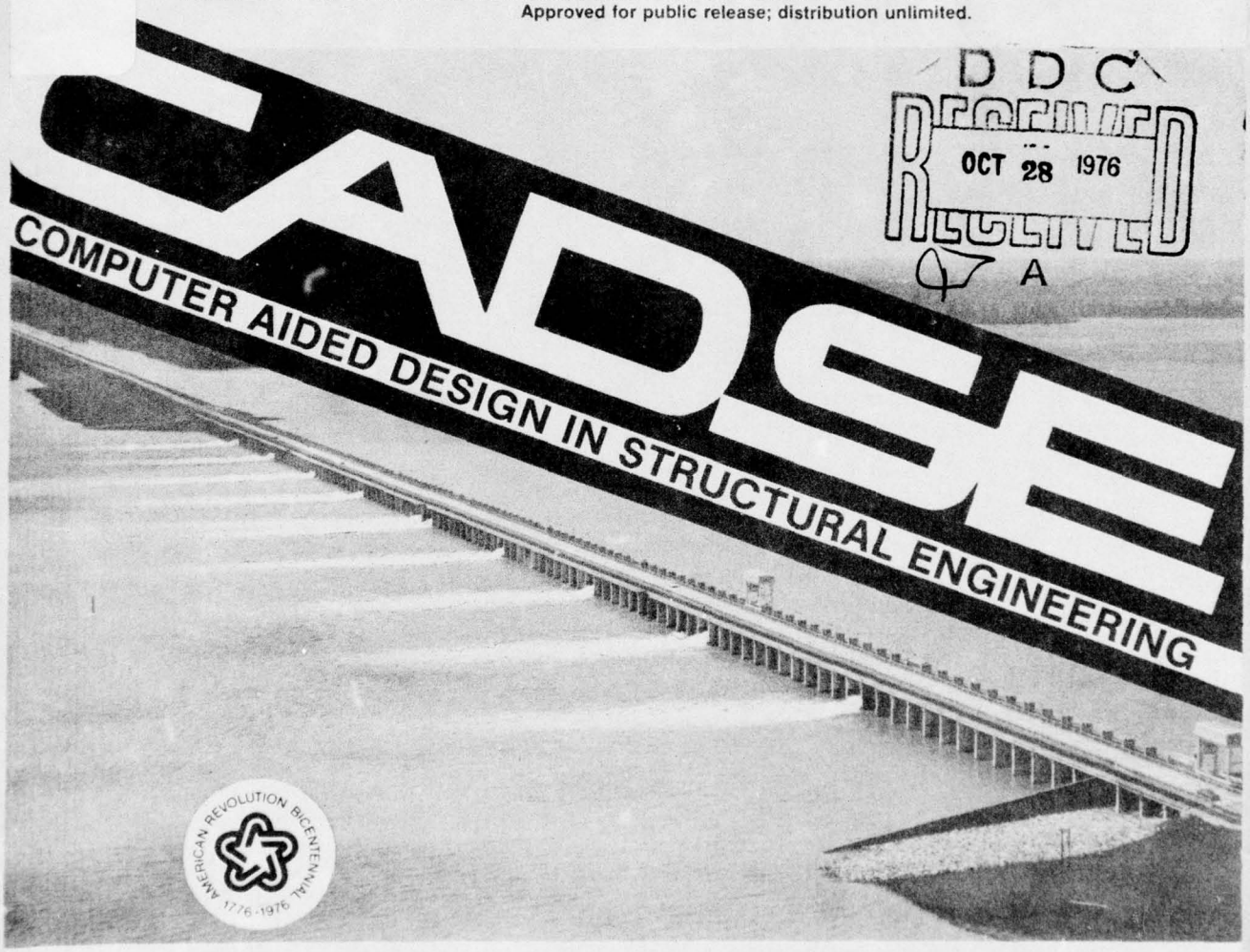
1 OF 2
ADA031244

CORPS-WIDE CONFERENCE ON COMPUTER AIDED DESIGN IN STRUCTURAL ENGINEERING

22-26 September 1975

VOLUME II
LIST OF COMPUTER PROGRAMS FOR CADSE

Edited and compiled by N. RADHAKRISHNAN and DOROTHY B. MAY



Prepared for Office, Chief of Engineers, U. S. Army
Washington, D. C. 20314 and

U. S. Army Materiel Development and Readiness Command
5001 Eisenhower Avenue, Alexandria, Va. 22333

August 1976

by Automatic Data Processing Center
U. S. Army Engineer Waterways Experiment Station
P. O. Box 631, Vicksburg, Mississippi 39180

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: Unnumbered
2. GOVT ACCESSION NO.:
3. RECIPIENT'S CATALOG NUMBER:

4. TITLE *(and Subtitle)*: CORPS-WIDE CONFERENCE ON COMPUTER-AIDED DESIGN IN STRUCTURAL ENGINEERING. VOLUME II, LIST OF COMPUTER PROGRAMS FOR CADSE
5. TYPE OF REPORT & PERIOD COVERED: Volume 2 of 12 volumes
6. PERFORMING ORG. REPORT NUMBER:

7. AUTHOR(s): Dr. N. Radhakrishnan; Mrs. Dorothy B. May
8. CONTRACT OR GRANT NUMBER(s): 12 121 7.

9. PERFORMING ORGANIZATION NAME AND ADDRESS:
U. S. Army Engineer Waterways Experiment Station
Automatic Data Processing Center
P. O. Box 631, Vicksburg, Mississippi 39180

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS:
6.58.03.A/1 E 865803
M728/00/005

11. CONTROLLING OFFICE NAME AND ADDRESS:
U.S. Army Materiel Development and Readiness Command
5001 Eisenhower Avenue
Alexandria, Va. 22333

12. REPORT DATE: August 1976
13. NUMBER OF PAGES: 118

14. MONITORING AGENCY NAME & ADDRESS *(if different from Controlling Office)*:

15. SECURITY CLASS. *(of this report)*: Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE:

16. DISTRIBUTION STATEMENT *(of this Report)*

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT *(of the abstract entered in Block 20, if different from Report)*

18. SUPPLEMENTARY NOTES

Presented at Corps-wide Conference on Computer-Aided Design in Structural Engineering, 22-26 September 1975, New Orleans, LA.

19. KEY WORDS *(Continue on reverse side if necessary and identify by block number)*

Structural Engineering
Computer Programs
Computer-Aided Design

20. ABSTRACT *(Continue on reverse side if necessary and identify by block number)*

This report contains a list of structural engineering and structures-related computer programs that are available and recommended throughout the U. S. Army Corps of Engineers. The list provides the computer program name, the author and/or contact person and office, library (if applicable), program number, computer and mode, information as to whether the program has been documented or not, and a short description of what the program was written to accomplish.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE *(When Data Entered)*

038 100

Preface

In December 1974, the Automatic Data Processing (ADP) Center, U. S. Army Engineer Waterways Experiment Station (WES), submitted a proposal to conduct a Corps-wide Conference on Computer-Aided Design in Structural Engineering (CADSE) to the Office, Chief of Engineers (OCE). OCE approved the proposal, and efforts were started in February 1975 to conduct this Conference. The Conference was conducted in New Orleans, Louisiana, 22-26 September 1975 and was attended by 175 engineers from 48 Corps field office, OCE, Construction Engineering Research Laboratory (CERL), and WES.

This report is a compilation of a list of computer programs available in the various Corps offices that can be of use to structural engineers in the Corps. This report is published with funds provided by the U. S. Army Materiel Development and Readiness Command under project Information Technology Establishment of the Engineering Computer Science Software Center. The Center, when established, will disseminate computer program information to engineering users through a variety of means such as newsletters, conferences, publication of bibliographies and program lists, and development of an on-line information and retrieval system for computer programs.

The list was compiled using a number of sources that included:

a. The State-of-the-Corps-Art papers presented by the moderators in the Conference.

b. Papers presented by the Division speakers in the Conference.

c. Discussions at the various speciality sessions of the Conference.

d. Personal communications with a number of structural and ADP engineers in the Corps.

This report is Volume II of the Proceedings of the Conference. Other volumes of the Proceedings published are:

Volume I: Management Report

Volume III: Invited Speeches and Technical Presentation

Volume IV: Division Presentations

Volume V:	State-of-the-Corps-Art (SOCA) Reports on Gravity Monoliths, U-Frame Locks, and Channels
Volume VI:	SOCA Reports on Gates, Stoplogs, and Trashracks
Volume VII:	SOCA Reports on Single- and Multiple-Cell Conduits and Tunnels
Volume VIII:	SOCA Reports on Pile Foundations and Sheet Pile Cells
Volume IX:	SOCA Reports on Sheet Pile Walls and T-Walls
Volume X:	SOCA Reports on Stiffness Methods, Frames, and Military Construction
Volume XI:	SOCA Reports on Earthquake and Dynamic Analyses
Volume XII:	Interactive Graphics, SEARCH and CORPS Systems

The conference was successful due to the efforts of a multitude of people. The roles they played were different but they were all directed toward making a concept on "instant dissemination" work. The Organizing Committee for the Conference consisted of:

COL G. H. Hilt, WES

Mr. F. R. Brown, WES

Mr. D. L. Neumann, WES

Mr. J. B. Cheek, Jr., WES

Dr. N. Radhakrishnan, WES - Conference Coordinator

Mr. W. A. Price, WES

Mr. G. S. Hyde, WES

Mr. D. R. Dressler, LMVD

Mr. W. B. Dodd, LMNDE

MS. E. Smith, LMNDE

Mr. L. H. Manson, LMNDE

An OCE Coordinating Committee also worked enthusiatically to ensure the success of the Conference. This Committee consisted of:

Mr. C. F. Corns

Mr. R. L. Delyea

Mr. R. F. Malm, OCE Coordinator

Mr. L. G. Gutherie

Mr. D. B. Baldwin

Mr. R. A. McMurrer

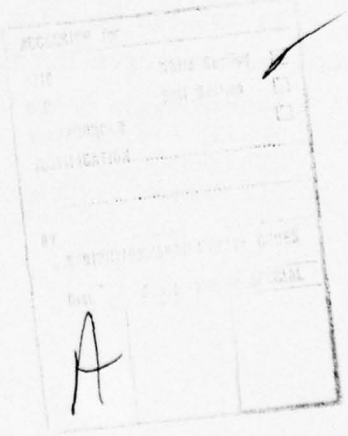
The U. S. Army Engineer District, New Orleans, did a remarkable job in playing hosts to the Conference.

There were 13 division speakers, 25 moderators, two invited speakers, four technical speakers, and ten session chairmen, who shared the technical load of the Conference. Also, eight computer vendors showed their wares to the participants.

The organizers would like to thank all the individuals who served on the committees and the speakers and moderators for sharing their time and thoughts. Without them the Conference would not have been the success it was. Mr. Donald Dressler, LMVD, and Mr. William Price, WES, are specially thanked for their technical guidance and assistance.

This report was compiled by Dr. N. Radhakrishnan, Research Civil Engineer, Computer Analysis Branch (CAB), and Special Technical Assistant, ADP Center, and Mrs. Dorothy B. May, CAB, ADP Center, under the direct supervision of Mr. J. B. Cheek, Jr., Chief, CAB, ADP Center, and under the general supervision of Mr. D. L. Neumann, Chief, ADP Center.

The Director of WES during the Conference and the preparation of this report was COL G. H. Hilt, CE. Mr. F. R. Brown was Technical Director.



Contents

	Page
Preface	1
Introduction	6
Huntsville Division Programs	8
Lower Mississippi Valley Division Programs	12
Memphis District	13
New Orleans District	15
St Louis District	19
Vicksburg District	23
Missouri River Division Programs	25
Kansas City District	26
Omaha District	30
New England Division Programs	34
North Atlantic Division Programs	37
Norfolk District	38
Philadelphia District	38
North Central Division Programs	39
Buffalo District	40
Chicago District	41
Detroit District	43
Rock Island District	45
St. Paul District	52
North Pacific Division Programs	56
Alaska District	58
Portland District	58
Seattle District	59
Walla Walla District	60
Ohio River Division Programs	61
Huntington District	62
Louisville District	66
Nashville District	68
Pittsburgh District	71
South Atlantic Division Programs	72
Jacksonville District	73
Mobile District	73
Savannah District	73
Wilmington District	80

	Page
South Pacific Division Programs	82
Los Angeles District	83
Sacramento District	86
San Francisco Ditrict	90
Southwestern Division Programs	91
Albuquerque District	92
Fort Worth District	93
Galveston District	93
Little Rock District	95
Tulsa District	95
Waterways Experiment Station Programs	98
Programs from Other Sources	111
Alabama, University of	112
American Imstitute of Steel Construction	112
California, University of	113
Chevron Oil Compnay	113
Duke University	113
General Electric Company	114
Georgia, State of	115
Massachusetts Institute of Technology	115
Portland Cement Company	116
Sandia Laboratories, Inc.	117
Shell Oil Co.	117
Texas A&M University	118
Texas, University of	118
Zienkiewicz, O. C.	118

STRUCTURAL ENGINEERING PROGRAMS IN THE CORPS

Introduction

This report is a compilation of a list of computer programs available for structural engineers in the Corps. The list was compiled using a number of sources that included:

a. The State-of-the-Corps-Art papers presented by the moderators in the Conference.

b. Papers presented by the Division speakers in the Conference.

c. Discussions at the various speciality sessions of the Conference.

d. Personal communications with a number of structural and ADP engineers in the Corps.

The list was very carefully compiled using the following procedure:

a. An initial list containing all the programs referred by the above-mentioned sources was first compiled.

b. This list was refined based on extensive checking that included personal communications to eliminate duplicate and obsolete programs.

The programs are arranged based on their source. That is, a Division's programs are listed first followed by all the programs of the Districts within that Division. Within each source office, the programs are arranged in the numerical sequence of program numbers with the unnumbered programs at the end of the lists. Programs, such as some general purpose codes, that do not have a Corps office source are listed at the end of this report under the heading "Other Sources."

Programs that were recommended in the Speciality Sessions and those that are in the computer-aided design library of the Corps (CØRPS) are identified with a double asterisk. Programs that are available from more than one source are marked with a single asterisk. Multiple listings of these programs are included due to possible minor machine-dependent changes in the various versions. All these multiple-listings programs have different numbers allocated by the different offices. Documentation of some programs may not be adequate and the users are urged to contact

the source office in case they need more information on any program.

Some programs in the structural area used by the Tennessee Valley Authority (TVA) and the U. S. Bureau of Reclamation (USBR) were provided at the Conference by the respective attendees. These lists are available from the editors and are not included in the current Corps list.

The editors feel that the list compiled in this report is fairly comprehensive and is in a form that can be revised, enlarged, and updated with time.

HUNTSVILLE DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
WAVSYN	Ralph M. Parsons Company USAE Huntsville Div.	ECPL	713-C8-70-05D	CDC 6400 Batch FORTRAN	X		"Waveform Synthesis," dynamic analysis of structures through synthesizing a time history of a motion to match any arbitrary shock response spectrum
SHOCK ISOLATION DESIGN FOR SAFE-GUARD TSE SYSTEMS & EQUIPMENT	Space Support Div. Sperry Rand Corp. Neal Davis Huntsville Division	ECPL	713-C8-70-05S	CDC 6400 Batch FORTRAN	X		The purpose of this system is to provide performance objectives and standard design & design verification methods for the installation of shock isolation systems.
SLAB	Agbabian Associates El Segundo, CA Fred Bourgeois Huntsville Division	ECPL	713-C8-70-06C	CDC 6400/7600 ASA Batch FORTRAN IV	X		A system of 3 programs for large finite element modeling in the elasto-dynamic analysis of thin & moderately thick plates of arbitrary shapes.
DYNAMIC, ELASTIC, PLANE STRAIN/STRESS (DEPS)	Agbabian Associates Fred Bourgeois or Neal Davis Huntsville Division	ECPL	713-C8-70-06C	CDC 6400 Batch FORTRAN IV	X		This system offers the solution of any dynamic, plane strain, plane stress, or axisymmetrical problem that can be adequately

(Continued)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
DEPS (Continued)							approximated by an assemblage of 1-D FEM.
GENSAP*	Fred Bourgeois Huntsville Division Agbabian Associates El Segundo, CA	ECPL	713-C8-70-06F	CDC 6400 FORTRAN IV	X		A general purpose system for 3-D analysis of structural systems using the finite element approach. Codes are based on SAP by E. L. Wilson, Univ. of CA, Berkeley.
INSLAB	Agbabian Associates El Segundo, CA Fred Bourgeois Huntsville Division		713-C8-70-130	CDC 6000 Batch FORTRAN IV	**		A program for the dynamic analysis of bending and transverse shear deformations in thin & moderately thick inelastic plates. The plate can be of arbitrary shape & can have beam or column supports, concentrated masses, and interior holes at arbitrary locations.

* Recommended.
** Partially documented.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FEDIA	Agbabian Associates El Segundo, CA Neal Davis Huntsville Division		713-C8-70-150	CDC 6400/7600 ASA Batch FORTRAN IV	*		A dynamic, inelastic, 2-D, continuism finite element computer code.
AN IMPROVED COMPUTER PROGRAM TO CALCULATE THE AVERAGE BLAST IMPULSE LOADS ACTING ON A WALL OF A CUBICLE	Stuart Levy Picatinny Arsenal Dover, NJ Robert Wamsley Huntsville Division			6600 CDC TSS Batch 7000 TSS Batch G-635 TSS Batch G-437 TSS	X		Calculates the average blast impulse loads acting on a wall of a cubicle when an explosive charge is detonated within the cubicle.

* Partially documented.

LOWER MISSISSIPPI VALLEY DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
MULTIPLE LOAD CASE PLANAR ORTHOGONAL ANALYSIS (OFRAME)	Robert E. Brittian Memphis District		713-G9-A1-030	GE-430 TSS FORTRAN	X		Determines the joint displacement and rotations, member end moments, and shears, and structural reactions for plahar orthogonal frames.
GFRAME*	Robert Brittian Memphis District or Clinton Word Galveston District	WESLIB ECPL	713-F5-A1-040	HONEYWELL G-437 Batch	X		The program determines the joint displacements and rotations, member end moments shears and axial loads and structural reactions for planar rigid structures.
PTRUSS (Program in Progress)**	Robert Brittian Memphis District	CORPS	713-G9-A1-050	G-635 TSS HONEYWELL FORTRAN	X		Solution of joint displacements and member axial loads for planar pinned trusses.
PCA-BM	Sefton Lucas Memphis District		None	HONEYWELL G-635 TSS FORTRAN		X	Past processor for GFRAME. It computes the resisting moment for a concrete beam. Checks shear at face of support. Computes moment at fixed increments and designs reinforcement for axial load plus bending.
NEWPILE	Lee Sulzberger Memphis District	A1B600		HONEYWELL G-600 TSS FORTRAN	X		3-Dimensional Pile Analysis (by Matrix Analysis).

* Recommended.

** Also available from the Huntington District (713-F5-H1-441).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FLWALL	Lee Sulzberger Memphis District			HONEYWELL 600 TSS FORTRAN		X	Analysis of floodwalls for overturning and sliding. Uses Rankine earth pressures for overturning and method of planes for sliding.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CENTROID OF A POLYHEDRON	M. E. Pittman New Orleans Dist.		713-F3-A2-100	G-635 TSS FORTRAN		X	This program finds the centroid and volume of an arbitrary polyhedron (solid bounded by plane surfaces).
FORCES ON INVERTED T-WALL	C. W. Ruckstuhl New Orleans Dist.		713-F5-A2-110	GE-430 TS updated to G-635 FORTRAN IV		X	Program computes summation of forces and moments on inverted concrete T-Wall for each of a given number of load conditions. Computes magnitude, location, and direction of the resultant for each load condition.
CANTILEVER RETAINING WALL STABILITY (S) CASE	Leonard Manson New Orleans Dist.		713-F3-A2-120	G-600 TSS FORTRAN IV	X		Program has been replaced by A & S version Program No. 741-F3-A2-370.
CHECK FOR COLUMNS UNDER BIAXIAL BENDING	D. J. Elguezabal New Orleans Dist. Leroy Brown New Orleans Dist.		713-F3-A2-130	G-635 TSS FORTRAN	X		Program checks reinforcing on columns under biaxial bending.
HRENNIKOFF PILE ANALYSIS WITH SUMMATION OF RESULTS	R. Villarubia, G. M. Finley, C. W. Ruckstuhl and D. J. Elguezabal New Orleans Dist.		713-F3-A2-150	G-635 TSS or Batch Modification 9 - FORTRAN		X	Computes actual axial and transverse loads, and allowable transverse loads, on each pile row for each set of applied forces & moments on a given pile arrangement of a battered pile foundation by the Hrennikoff Method.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
COMPUTATION OF APPLIED FORCES AND MOMENTS ON AN INVERTED, VARIABLE DEPTH T-WALL	Leroy Brown New Orleans District		713-F3-A2-160	HONEYWELL G-600 TSS FORTRAN IV	X		The purpose of this program is to compute the total applied forces and moments on an inverted T-Wall that varies linearly in depth. T-Wall is divided into segments, forces, and moments are computed for each segment and accumulated algebracially to obtain the totals for each case.
THREE-DIMENSIONAL PILE FOUNDATION ANALYSIS	H. C. Edgecombe New Orleans District		713-F3-A2-210 Modification 6	G-600 TSS FORTRAN	X		The purpose of the program is to provide a three-dimensional analysis of a pile foundation. The general method of analysis is an expansion to 3-dimensions (by SAUL) of the Hrennikoff direct stiffness methods for a 2-D analysis.
THREE-DIMENSIONAL PILE FOUNDATION ANALYSIS	H. C. Edgecombe New Orleans District		713-F3-A2-210 Modification 7	G-635 TSS and remote batch FORTRAN IV		X	Same as previous program except available in both time-sharing and remote access. Pile and pile type.
EQUIV. K FOR PILE IN STRATIFIED SOIL SYSTEM	C. W. Ruckstuhl, Jr. New Orleans District		713-F5-A2-250	GE-435 TSS Converted to G-635 TSS FORTRAN IV		X	For a pile in a stratified soil system with different known values of module of horizontal subgrade reaction (constant and/or varying linearly with depth) computes a single equivalent value of constant modulus.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BEAM DEFLECTION	Dennis J. Beer New Orleans District D. J. Elguezabal, Jr New Orleans District		713-F5-A2-270	GE-435 TSS G-635 ASA FORTRAN		X	To calculate deflection on a beam loaded with one or more loading conditions. Program is set up to calculate the deflections caused by six different types of loading.
READ & STORE W SHAPE STEEL PROPERTIES	Jim Flock New Orleans District		713-G2-A2-280	HONEYWELL G-415 Batch FORTRAN IV			The purpose of the program is to read AISC steel column W shape properties and store them on tape.
CENTER (Program in Progress) *	New Orleans District	CORPS	733-F3-A2-240	G-635	X		Determines offset ties from a baseline to any proposed centerline which consists of simple circular curves or straight reaches.
CANTILEVER RETAINING WALL STABILITY (Q) & (S) CASES*	Michael LaMarca New Orleans District	CORPS	741-F3-A2-370	G-635 TSS FORTRAN			Determines the penetration of a cantilever retaining wall subject to lateral forces that impart overturning moments. Computes lateral earth forces & overturning moments for each foot of depth and balances each to satisfy stability requirements of the method of planes.
BEAM (SHEAR, MOMENT DEFLECTION) (BEAMNOD)*	Dennis J. Beer New Orleans District	CORPS	713-F5-A2-580	GE-400 TSS G-635 FORTRAN IV		X	The program will select from a file and/or analyze a symmetrical straight member for any statically determinant (Continued)

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BEAMS (SHEAR, MOMENT, DEFLECTION) BEAMNOD (Cont.)							one-dimensional load system which consist of transverse print loads and/or couples.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
THEORETICAL SECTION OF NON-OVERFLOW MONOLITH	K. R. Koller and S. A. Williams St. Louis District		713-R3-A3-090	Converted to G-400 Batch FORTRAN	X		Program is designed to determine a theoretical profile for a non-overflow monolith of a concrete gravity dam. The program computes the theoretical section, a section that is stable and is safe against sliding, and a practical section can be determined from the results.
COMPUTATION OF FORCES ON TAINTER GATE AND TRUNNION PIN (GFRAME)	Jon W. Eckles St. Louis District		713-G1-A3-110	HONEYWELL G-225 Batch updated to G-600 FORTRAN	X		The program performs a static analysis of a Tainter Gate assembly, accounting for various forces encountered in its operation.
SPILLWAY AND PIER MONOLITH STABILITY ANALYSIS	K. R. Koller and Joe Davis St. Louis District		713-R3-A3-150	Converted to G-400 Batch FORTRAN	X		Analysis of a spillway (W/Ogee weir) and pier monolith. Program compute the dead load and dead moment (about the heel) of the spillway and pier from their respective geometries.
IMPROVED 3-D PILE*	Thomas J. Mudd Carl Smith St. Louis District	CORPS	713-F3-A3-30A	600 Batch/TSS FORTRAN			Rigid base indeterminate pile analysis by Matrix. Computes pile combined axial and bending and compares to allowable.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
NON-OVERFLOW MONOLITH STABILITY ANALYSIS	Tom Mudd St. Louis District		713-R3-A3-400	RCA 301 converted to G-400 Batch FORTRAN	X		Program analyzes one-foot slice of a non-overflow monolith for stability sliding 4 base pressures.
CANTILEVER RETAINING WALL, STABILITY DESIGN	Arthur Johnson and James Worts Jon Eckles Gerald Schwalbe St. Louis Dist.		713-R1-A3-440	G-635 Batch FORTRAN	X		The program is to design a one-foot section of a cantilever retaining wall. It allows for various water elevation on either side of the wall.
CANTILEVER RETAINING WALL STABILITY ANALYSIS AND FINAL DESIGN	Arthur Johnson and James Worts Jon Eckles or Gerald Schwalbe St. Louis District		713-R1-A3-450	G-635 Batch FORTRAN	X		The problem is to analyze a one-foot slice of a cantilever retaining wall for stability and to design the area of steel required.
MATLOCKS RECURSIVE SOLUTION FOR BEAM COLUMNS	Larry Farmer, Univ. of Missouri Tom Mudd St. Louis District	WESLIB	713-F3-A3-500	HONEYWELL G-600/6000 FORTRAN TSS	X		The program analyses beam-column problems, and provides answers that appromixate classical solutions to similar problems. Program analyze a model consisting of interacting bars and springs and the solution is consistent with the similarity of the model with the problem to be analysed.
MATLOCKS RECURSIVE SOLUTION FOR BEAM COLUMNS WITH MOVING LOADS	Larry Farmer, Univ. of Missouri Rev. by Joseph P. Hartmann - SLD		713-F3-A3-50A	HONEYWELL G-600/6000 Batch FORTRAN	X		Same as program 713-F3-A3-500, except for moving loads.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BOUSSINESQ SURCHARGE PRESSURES ON RETAINING WALLS	Joseph Davis Jon Eckles Gerald Schwalbe St. Louis District		713-R1-A3-690	G-635 Batch FORTRAN			This program was written to provide the incremental and resultant pressures and moments arms active stem and heel.
INDETERMINATE PILE ANALYSIS 3-DIMENSION BY MATRIX METHOD	Thomas Mudd St. Louis District or Wayne Jones WES		713-F1-A3-840	G-635 TS and Batch FORTRAN IV	X		This program is general method of analysis by direct stiffness of 3-dimensional pile foundations. The pile foundation consists of a group of piling placed into the soil topped with a rigid cap. Loads to the caps are transmitted by the piling to the soil.
SLAB, SHEARS, AND MOMENTS	Joseph P. Hartmann Carlton Smith St. Louis District		713-F3-A3-900	HONEYWELL G-600/6000 TSS FORTRAN			This program uses pile forces, output from the indeterminate pile analysis program to calculate slab shears and moments.
STRUCTURAL ANALYSIS OF CONCRETE U-FRAME LOCK ON PILES (2-D FLEX-PILE)	Edward Demsky St. Louis Dist.		713-F3-A3-910	HONEYWELL G-600/6000 FORTRAN TSS	X		Program performs an analysis of a two-dimension concrete U-frame lock on piles driven in sand.
TUNNEL*	G. S. Orenstein Thomas Mudd St. Louis District			H-635 TSS FORTRAN IV		X	Analyzes steel tunnel supports for shear, moment, thrust, and deflections.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
HORSHU	G. S. Orenstein Thomas Mudd St. Louis District			TSS		X	Generates some of input required for TUNNEL in the special case of horseshoe-shaped tunnel.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BOX CULVERT DESIGN FOUR CELL	Walter Miller Vicksburg District		713-G9-A4-010	G-425 Batch FORTRAN		X	This program was developed to analyze a 4-cell box culvert section for moments, shears, thrusts and steel areas. The analysis is made by moment distribution methods.
SM 468	Robert L. Fleming Vicksburg District		713-G9-A4-020	G-435 FORTRAN	X		Plane Frame - Beam element finite element code.
BOX CULVERT DESIGN THREE CELL	Walter Miller Vicksburg District		713-G9-A4-030	G-425 Batch FORTRAN		X	This program was developed to analyze a 3-cell box culvert section for moments, shears, thrusts and steel areas. The analysis is made by the moment distribution methods.
BOX CULVERT DESIGN ONE CELL	Walter Miller Vicksburg District	ECPL	713-G9-A4-060	G-425 Batch FORTRAN	X		This program was developed to analyse a 1-cell box culvert section for moments, shears, thrusts and steel areas. The analysis is made by the moment distribution methods.
BOX CULVERT DESIGN TWO CELL	Walter Miller Vicksburg District		713-G9-A4-070	G-425 Batch FORTRAN		X	This program was developed to analyze a 2-cell box culvert section for moments, shears, thrusts, and steel areas. The analysis is made by the moment distribution methods.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TWO-DIMENSIONAL NON-ORTHOGONAL PLANE FRAME ANALYSIS	Charles Hargett Vicksburg District		713-F3-A4-140	G-437 Batch FORTRAN	X		This program is designed to analyze plane frames or continuous beams taking into account bending and axial deformation. The structural system may be orthogonal, non-orthogonal or a combination of both. Analysis is by stiffness method.

MISSOURI RIVER DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
SINGLE HORSESHOE, ARCH, AND MODIFIED OBLONG CONDUIT DESIGN	Harry Beyer or Byron Bircher Kansas City Dist.		713-F5-C1-01A	G-225 Remote Batch G-437 FORTRAN			This program performs a completely automatic structural design or review of a horseshoe, arch, or modified oblong conduit.
CIRCULAR & OBLONG CONDUIT DESIGN* **	Marion Harter James L. Goering Byron Bircher Harry Beyer Kansas City District		713-F5-C1-01B (713-R3-C122)	HONEYWELL G-437 Batch FORTRAN			This program performs a completely automatic structural design or review of an oblong or circular conduit.
STRESS ANALYSIS DUE TO BENDING & COMPRESSIVE THRUST	Byron Bircher Kansas City District		713-F5-C1-02A	HONEYWELL G-437 Batch FORTRAN	X		Analysis of a beam or column subject to any combination of moment, shear, and axial load using working stress methods.
BIAXIAL BENDING	Byron Bircher Kansas City District		713-F6-C1-02C	HONEYWELL G-437 Batch FORTRAN	X		An elastic analysis of rectangular reinforced concrete members such as "hammerhead" bridge piers.

* Recommended.
** Also available from Huntington District (713-G1-H1-321).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
K C RETAINING WALL DESIGN	Marion Harter Byron Bircher Kansas City District	Omaha	713-F5-C1-030	HONEYWELL G-437 Batch FORTRAN	X		Design of cantilever and gravity walls.
UPLIFT	Morris Granaden Byron Bircher Kansas City District		713-F5-C1-050	HONEYWELL G-437 Batch FORTRAN	X		Computes uplift force and safety factor against uplift for the stilling basin structure, considering the basin to act as a monolithic unit.
TOWER STABILITY	Byron Bircher Kansas City District Morris Ganaden		713-F5-C1-070	G-437/Remote Batch FORTRAN	X		Complete stability analysis including foundation pressures are provided for a typical intake tower.
GRAVITY DAM, PIER, AND SPILLWAY ANALYSIS	Marion Harter Byron Bircher Melvin Jewitt Roy Reed Kansas City District		713-R3-C1-090	RCA 301 Batch FORTRAN			Determines the overturning and sliding stability of any gravity overfall spillway structure that has either a horizontal or an irregular base.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
REINFORCED CONCRETE PIPE DESIGN	Harold Fowlkes Kansas City District		713-F5-C1-100	G-225/Remote to G-437 Batch FORTRAN	X		Computes the area of reinforcement steel in both faces. Determines steel stress and concrete stress.
FLOODWALL STABILITY ANALYSIS	Harold Fowlkes Kansas City Dist.		713-F5-C1-170	G-225/Remote to G-437 Batch FORTRAN	X		Stability analysis for design of inverted T-Walls.
PLANE FRAME MATRIX ANALYSIS	Morris Ganaden Byron Bircher Kansas City Dist.		713-F5-C1-190	HONEYWELL G-437 Batch FORTRAN	X		Two dimension structural frame analysis using Matrix methods.
TAINTER GATE ANALYSIS AND DESIGN	Marion M. Harter Roy D. Reed Ervell A. Staab/ William Morris Kansas City District		713-R3-C1-240	RCA 301 FORTRAN			4 Subroutines: (1) Interior Rib Design - determine the location of girders supporting the ribs, rib shears and moments and some of the geometry. (Continued)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TAINTER GATE ANALYSIS AND DESIGN (CONTINUED)							(2) Exterior Rib Design - determines shears and moments for the exterior ribs due to load from lifting cable; (3) Rigid frame and stress analysis - determines forces, stresses, and deflections in a frame consisting of the girder supporting the ribs and two struts transmitting the loads to the trunnion. (4) Tainter gate reactions - determines trunnion reactions at various gate openings when supported equally with cables.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
MOMENT DISTRIBUTION MULTISTORY FRAME	Walt Diely Omaha District Paul E. Boldan		713-M1-C2-050	G-437 Batch FORTRAN	X		Computes moments & shears at the joints of all members, moments and shear distribution.
PCA AIRPORT PAVEMENT DESIGN*	Charles Overstreet Jesse Moore, Jr./ Portland District		713-M1-C2-070	G-437 Batch FORTRAN	X		Determines flexural stresses in a concrete pavement for aircraft gear loads.
PCA PRESTRESSED BRIDGE DESIGN	Charles Overstreet Jesse Moore, Jr. Portland District. Jim Peterson Seattle	Omaha	713-M1-C2-090	IBM 360/50 Batch G-437 FORTRAN	X		Analysis and design of simple-span, precast-prestressed highway or railway bridges.
STEEL COLUMN DESIGN	Walt Diely Omaha District W. Gaube P. Boldan	Omaha	713-M1-C2-100	G-437 FORTRAN TSS		X	Program makes calculations similar to those made by a column designer by hand methods except that "K" sidesway permitted is calculated by the computer.
CANTILEVER SHEET PILE	Walt Diely Omaha District	Omaha	713-M1-C2-130	G-437 FORTRAN Batch		X	Analyzes design of a cantilever retaining wall given the heights of sheet piling water levels.

* Also available from Seattle District (713-K5-G3-310).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
2-D FRAME *	Wilson Univ. of CA./ Walt Diely Omaha District	Omaha	713-M1-C2-200	HONEYWELL G-437 Batch FORTRAN	X		Joint deflection, member end forces, and joint reactions are determined for plane frames which may be subjected to joint loads.
2-D FRAME COMBINED LOAD CASES *	Wilson Univ. of CA./ Walt Diely Omaha District		713-M1-C2-20A	HONEYWELL G-437 Batch FORTRAN	X		Same as above but modified so that the results of runs for individual load cases can be combined in any desired ratio.
MOMENT DISTRIBUTION	Walt Diely Omaha District Paul E. Boldan	Omaha	713-M1-C2-210	G-437 Batch FORTRAN	X		Compute moments and shears at the reactions of a continuous beam.
T-FLOOD WALL**	Michael Downs/St. Paul District S. A. Williams St. Louis District Rev. By: Michael B. Downs & Gerald Cohen St. Paul District Walt Diely Omaha District	Omaha	713-M1-C2-370	G-437 Batch FORTRAN	X		Determines the structural members & shears distribution required for the design of a T-type floodwall. Analyzes T-type floodwall for overturn stability based on criteria given in EM 01110-2-2501.

* Recommended.

** Also available from St. Paul District (713-G1-F5-060).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
MULTI-CELL BOX CULVERT	Walt Diely Omaha District	Omaha	713-M1-C2-380	G-437 Batch FORTRAN	X		Analyze frames having variable cross sections.
BOX CULVERT MOMENTS AND SHEARS	John Harberg Omaha District	Omaha	713-M1-C2-38A	G-437 Batch FORTRAN		X	Computes reinforcing steel requirements for multi cell box culvert as analyzed by the above program.
VOUSSIOR CONDUIT DESIGN	Brockman Omaha District	Omaha	713-M1-C2-390	HONEYWELL G-437 Batch FORTRAN	X		A conduit analysis program in three segments with the primary references being: 1. PCA analysis of arches, rigid frames and sewer sections. 2. EM 1110-2-2901 conduit, culvert and pipe.
VANDERBILT FRAME	Vanderbilt Univ. Walt Diely Omaha District	Omaha	713-M1-C2-400	G-437 Batch FORTRAN	X		Used to solve for shear, moment, deflection, and rotation at the joints of plane frames.
STABILITY OF RIGID STRUCTURES	Tim Knight Omaha District	Omaha	713-M1-C2-410	G-437 FORTRAN Batch		X	Analysis of structure for sliding and overturning.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FINITE ELEMENT METHOD IN STRUCTURAL ANALYSIS	Univ. of MO at Ralla Walt Diely Omaha District	Omaha	713-M1-C2-420	G-437 FORTRAN Batch	X		Program purpose is to determine deformation and stress within 2-D plane stress structures or arbitrary shapes. The effects of displacement boundary conditions uniform loads, concentrated loads, and gravity forces are included.
AXISYMMETRIC SOLIDS	Univ of CA Walt Diely Omaha District E. L. Wilson	Omaha	713-M1-C2-430	G-437 FORTRAN Batch	X		Determines deformations and stress within axisymmetric structures of arbitrary shape.
I-WALL ANALYSIS, FOUR SOIL ZONES *	Walt Diely Omaha District	Omaha	713-M1-C2-500	G-437 FORTRAN Batch		X	Determines the loads on a "I" wall embedded in a maximum of 4 soil zones and subjected to a full flood.

* Also available from St. Louis District (713-G1-A3-020).

NEW ENGLAND DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
STABILITY ANALYSIS OF NON-OVERFLOW GRAVITY DAM (DAMPAC)	Paul R. Laliberte William Holtham USAE Division New England	ECPL	713-F5-D0-100	GE-427 Batch INFONET UNIVAC 1108 FORTRAN IV	X		Stability analysis of non-overflow gravity dam, including sliding and çverturning. Upstream slope and key depth vary to meet criteria.
STRESS ANALYSIS OF NON-OVERFLOW GRAVITY DAM (DAMPAC)	Paul R. Laliberte William Holtham USAE Division New England	ECPL	713-F5-D0-101	GE-427 Batch INFONET UNIVAC 1108 FORTRAN IV	X		This program computes end stress at any specified elevation within a non-overflow gravity dam section. Stresses are also computed at the ends of an opening (i.e., gallery) if located at the elevation specified. Vertical and inclined compressive stresses and shear stresses are output.
3-D STABILITY ANALYSIS - NON-OVERFLOW GRAVITY DAM (DAMPAC)	Paul R. Laliberte William Holtham New England Div.	ECPL	713-F5-D0-102	GE-427 Batch INFONET UNIVAC 1108 FORTRAN IV	X		Investigates sliding and overturning stability of a complete monolith with either a horizontal or irregular shaped base.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
STABILITY ANALYSIS - OVERFLOW GRAVITY DAM (DAMPAC)	Paul R. Laliberte William Holtham USAE Division New England	ECPL	713-F5-D0-105	GE-427 Batch INFONET UNIVAC 1108 FORTRAN IV	X		"Stability Analysis of Overflow Gravity Dam," with ogee spillway section. Program varies upstream slope or key depth to meet criteria. Base pressures are output.
EFFRAM *	Paul R. Laliberte William Holtham New England Div.		713-F7-D0-110	GE-400 Batch FORTRAN IV	X		Computes joint deflections and member end forces which are subjected to joint displacements. The structure may be found on an elastic foundation.

* Recommended.

NORTH ATLANTIC DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CONCRETE GENERAL FLEXURE ANALYSIS (CGFA)* **	E. T. Gates, SWGAD H. L. Miller, NPS	WESLIB ECPL	713-G1-E0-011 713-F3-E0-010	HONEYWELL G-225 Batch HONEYWELL G-635 TSS FORTRAN	X		Elastic analysis of combined axial load plus bi-axial bending due to the axial load on a cracked section.
CONCRETE COLUMN ANALYSIS, BI-AXIAL	Carl Doughty Philadelphia Dist.		713-F5-E5-020	GE-435 TSS GE-437 Batch GE-600 TSS FORTRAN IV		X	This program analyzes reinforced concrete columns subjected to an axial load and moments about each axis. The stresses at critical locations in the concrete section are computed as well as the maximum and minimum steel stresses. All computations are based on Working Stress Design (WSD) assumptions.
DETERMINATE TRUSS ANALYSIS	David S. Heindel Norfolk District	ECPL	713-F7-E4-580	G-225 Batch FORTRAN II	X		Determine truss analysis of a simple statically determinate pin connected truss for the support reactions and axial stress in up to 425 members. Loads applied at joints.

* Originally from Seattle District (713-K5-G3-010).
** Recommended.

NORTH CENTRAL DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
PLANE STRESS - FINITE ELEMENT ANALYSIS	E. L. Wilson Univ of CA		713-F5-F0-002	HONEYWELL G-425 Batch FORTRAN	X		This program determines the stress distribution, and deflections of a two dimensional continuous body subjected to both external and body forces.
GRAVITY LOCKWALL STAB 1' SECTION	Elex Alter Chicago District		713-C8-F1-010	IBM 7044 Batch FORTRAN IV	X		Analysis of a gravity lockwall to determine base reactions, sliding factor, and percent of base under compression.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GRAVITY LOCKWALL MONO STABILITY	Elex Alter Chicago District		713-C8-F1-020	CDC 6400 Batch FORTRAN IV	X		Analysis of a gravity lock wall monolity to determine the base reactions, sliding factor and percent of base under compression.
SINGLE DRYDOCK STRUCTURE ON ELASTIC FOUNDATION	Elex Alter Chicago District Bill Ashton Rock Island Dist.		713-C8-F1-030	CDC 6400 Batch FORTRAN IV	X		Analysis of a single drydock type wall (1 foot section) to determine base reactions, moments and shears for use in computing reinforcement requirements in the channel slab.
BEAM ANALYSIS - COMBINED BENDING	Elex Alter Chicago District		713-C8-F1-040	CDC 6400 Batch FORTRAN IV			Analysis of a concrete beam to determine and/ or compressive reinforcement required. It also computes all stresses in the beam together with the allowable based on EM 1110-1-2101.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CELLULAR SHEET PILE STRUCTURE	Elex Alter Chicago District		713-C8-F1-050	CDC 6400 Batch FORTRAN IV	X		Design of a sheet pile cell or a parallel wall by Cumming's method to determine an equivalent width with a tilting factor.
CANTILEVER PILE MULTI-LAYER DESIGN W/WO/IMPACT OR WAVE FORCE	Elex Alter Chicago District		713-C8-F1-060	CDC 6400 Batch FORTRAN IV	X		Determine maximum moment and embedment elevation for a cantilever pile wall.
SHEET PILE MULTI-LAYER DESIGN W/ TIEBACK	Elex Alter Chicago District		713-C8-F1-070	CDC 6400 Batch FORTRAN IV	X		Design a sheet pile wall - determine depth of embedment, the tieback force and maximum moment required with one or more layers of soil on both sides of wall.
LOCK WALL ANALYSIS	J. P. D'Aniello Chicago District		713-F5-F2-013	HONEYWELL G-425 G-635 Batch FORTRAN IV	X		Analyzes the stability of a lock wall by determining the vertical and horizontal reactions and safety factors against sliding and overturning.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
RETAINING WALL DESIGN	J. W. Bowles Bradley University D. J. Cook Detroit District		741-G1-F3-009	G-225 Batch FORTRAN II	X		The program designs a retaining wall based on a cantilever design using Working Stress Design (WSD). The cantilever is reinforced concrete with the wall elements (stem, toe, heel and key) sized to meet general stability and structural design criteria.
NEWMARK NUMERICAL METHOD FOR STEEL SHEET PILING	M. S. Grazioli, Jr. Detroit District		713-G1-F3-010	G-225 Batch FORTRAN II	X		The program designs an anchored bulkhead by four methods; Free Earth Support, Equivalent Beam, Elastic Line (Fixed Earth) and Equal Moment.
MISC. STEEL DESIGN	M. S. Grazioli, Jr. Detroit District		713-G1-F3-030	G-225 Batch FORTRAN II	*		To design the Miscellaneous Steel required for an Anchored Steel Sheet Piling Wall. The program designs the Tie Rods, Wales Machine Bolts, Spreader Plates and Splice Plates.

* Partially documented.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
T-WALL DESIGN	Detroit District		713-G1-F3-040	G-225 Batch FORTRAN	*		
CONTINUOUS STEEL SHEET PILING ANCHOR WALL	Richard R. Doebler Detroit District		713-G1-F3-050	G-225 Batch FORTRAN II	*		To determine the depth of penetration and required section of a steel sheet piling anchor wall. If the point of zero moment on the front wall is given, the length of tie rod is also computed.
PACKSHAW METHOD OF DESIGN FOR SSP BACK-WALL	M. Grazioli, P. Kytasty and L. Marchinda Detroit District		741-G1-F3-070	G-225 Batch FORTRAN II	*		To determine the length and strength of the backwall of a dual walled cofferdam. The program is useful for design of continuous anchor wall placed at a distance closer to the bulkhead than normally required. Can also solve a cantilever SSP wall by specifying Tie Rod Force = 0 and cell width extremely wide.

* Partially documented.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF BEAMS BY DIRECT STIFFNESS (BEAM 1) *	William Ashton Rock Island Dist.	WESLIB	713-F3-F4-01A	HONEYWELL G-635 TSS & Batch HONEYWELL G-437 TSS & Batch INFONET UNIVAC 1108 TSS FORTRAN	X		Analysis of beams by direct stiffness method. A computer program to analyze beams of variable cross section subjected to arbitrary loading. It uses the principle of matrix structure analysis, using the displacement method. Data can be entered interactively or from a data file.
ANALYSIS OF PIN JOINTED TRUSSES BY DIRECT STIFFNESS (TRUSS) *	William Ashton Rock Island Dist.	WESLIB	713-F3-F4-01B	HONEYWELL G-635 TSS & Batch HONEYWELL G-437 TSS & Batch INFONET UNIVAC 1108 TSS FORTRAN	X		Plane pin jointed truss analysis by direct stiffness. Total truss structure stiffness is assembled from individual truss bar stiffness matrices Then equation and term related to known boundary conditions are modified. Data can be entered interactively or from a data file.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF PLANE FRAMES BY DIRECT STIFFNESS (FRAME)*	William Ashton Rock Island Dist.	WESLIB	713-F3-F4-01C	HONEYWELL G-635 TSS & Batch HONEYWELL G-437 TSS & Batch INFONET UNIVAC 1108 TSS FORTRAN	X		Analysis of frames by direct stiffness method. Computer program to analyze frames of variable cross section subjected to arbitrary loading. It uses the principle of matrix structure analysis, using the displacement method. Data can be entered interactively or from a data file.
ANALYSIS OF GRIDS BY DIRECT STIFFNESS (GRID)*	William Ashton Rock Island Dist.	WESLIB	713-F3-F4-01D	HONEYWELL G-635 TSS & Batch HONEYWELL G-437 TSS & Batch INFONET UNIVAC 1108 TSS & Batch FORTRAN	X		Grid analysis by direct stiffness. The individual grid element stiffness matrix is transferred to the grid structure coordinate system and modified for specified boundary restraints. These are added to form total structure stiffness matrix. Data can be entered interactively or from a data file.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF SPACE TRUSS BY DIRECT STIFFNESS (STRUSS)*	William Ashton Rock Island District	WESLIB	713-F3-F4-01E	HONEYWELL G-635 TSS & Batch HONEYWELL G-437 TSS & Batch INFONET UNIVAC 1108 TSS FORTRAN	X		Pin jointed space truss by direct stiffness. Space structures composed of members which are assumed straight between joints, with loads applied at joints only and whose ends are free to rotate are considered. Individual bar stiffness matrices, determined by a modified Gaussian elimination procedure.
ANALYSIS OF SPACE FRAMES BY DIRECT STIFFNESS	William Ashton Rock Island District		713-G1-F4-01F	G-437 TSS and Batch G-635 TSS & Batch INFONET UNIVAC 1108 TSS	X		The program computes joint deflections, member forces, and member stresses for space frames subjected to joint loads and joint displacements.
ARBITRARY TWO-DIMENSIONAL STRESS STRUCTURES	Dr. E. L. Wilson Univ of CA, Berkeley William Ashton Rock Island District		713-G1-F4-02A	G-437 TSS and Batch G-635 TSS UNIVAC 1108 TSS FORTRAN IV	X		Analysis of arbitrary 2-D stress structures using direct stiffness methods. Finite element program.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF MOMENTS, SHEARS, AND REACTIONS FOR MOVING CONCENTRATED LOADS ON SIMPLE SPANS (WTRAIN) *	William Ashton Rock Island District	WESLIB	713-F7-F4-21A	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN II	X		The program permits immediate availability of maximum curves of moment, shears, and reactions for analyzing structures.
INFLUENCE ORDINATES AND AREAS AND DESIGN MOMENTS ON CONTINUOUS BEAMS (INFORD) *	William Ashton Rock Island District	CORPS	713-G1-F4-22A	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN	X		The program computes the ordinates required to construct influence lines for shear, moment, and reactions at the tenth span points for continuous beams. Also calculates the design moments or interior and exterior girder lines.
CONTINUOUS GIRDER HIGHWAY BRIDGE ANALYSIS	William Ashton Rock Island District		713-G1-F4-22B	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN	X		The program computes design moments for continuous highway bridge girders. Currently handles bridges with four or more parallel girders, but could be revised to handle a two girder system by modification of the lateral distribution factor.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF SIMPLE SPAN HIGHWAY BRIDGES (SIMBRG)	William Ashton Rock Island District	CORPS	713-F7-F4-24A	G-437 TSS & Batch G-635 TSS & Batch FORTRAN	X		The program analyzes any four stringer, simple span highway bridge for AASHTO. H-truck and Lane Load. The analysis is for tenth-span points.
ANALYSIS OF NON-COMPOSITE STEEL GIRDER (GIRD1) *	Richard C. Atkinson William Ashton Rock Island Dist.	WESLIB	713-F7-F4-31A	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN	X		This program analyzes plate girders in accordance with the 1969 AASHTO specification.
ANALYSIS OF COMPOSITE STEEL GIRDER (GIRD 2) *	William Ashton Rock Island Dist.	WESLIB	713-F7-F4-31A	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN IV	X		This program analysis composite plate girders for positive moments.
ANALYSIS OF BRIDGE PIER - AASHTO	William Ashton Rock Island Dist.		713-G1-F4-36A	G-225 Batch FORTRAN II G-437 TSS & Batch G-635 TSS & Batch FORTRAN IV	X		Stability analysis of highway bridge pier conforming to the group loading designated in the 1969 AASHTO specifications for Highway Bridges.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF TELE-SCOPIC BRIDGE PIER (AREA)	William Ashton Rock Island Dist.		713-G1-F4-37B	G-225 Batch FORTRAN II -437 TSS & Batch -635 TSS & Batch INFONET UNIVAC 1108 FORTRAN IV	X		The computer program analyzes the stability of telescopic railroad bridge piers in accordance with AREA specifications.
TWIN BOX CULVERT DESIGN	Iowa State Highway Commission William Ashton Rock Island Dist.		713-G1-F4-38A	G-225 Batch FORTRAN II	X		Analysis of twin barrell reinforced box culverts.
CANTILEVER SHEET PILE WALL*	William Ashton Rock Island District		713-F7-F4-41A	HONEYWELL G-225 Batch G-635 TSS INFONET UNIVAC 1108 FORTRAN	X		This program analyzes a cantilever sheet pile wall in sand which depends solely on its embedment for stability.
LOCKWALL STABILITY ANALYSIS**	CPT Camden W. McConnell & Mr. Carl A. Johnson Rock Island District		713-G1-F4-44A	HONEYWELL G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN	X		3-Dimensional analysis of lockwall monoliths, land, intermediate, and river walls with or without gate loads.

* Also available from St. Paul District (713-G1-F5-010).
** Also available from St. Paul District (713-G1-F5-120).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GENERAL CLOSURE STRUCTURE	William Ashton Rock Island District		713-G1-F4-51E	HONEYWELL G-437 G-635 TSS & Batch FORTRAN	X		The program analyzes the stability of closure structures with vertical floodgates.
PILE FOUNDATION ANALYSIS BY HRENNIKOFF'S METHOD	P. Michael Boyd Rock Island District		713-G1-F4-62A	G-200 Batch FORTRAN	X		The load carried by each pile is proportional to the displacement of the pile head. All piles behave alike. The footing is rigid.
MOMENT DISTRIBUTION ON 1-3 CELLS	William Ashton Rock Island District		713-G1-F4-71A	G-225 Batch INFONET UNIVAC 1108 FORTRAN	X		3-cell moment distribution.
PROPERTIES OF BEAMS WITH VARYING DEPTH USING METHOD OF COLUMN ANALOGY	William Ashton Rock Island District		713-F7-F4-73A	G-437 TSS & Batch G-635 TSS & Batch FORTRAN	X		

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CANTILEVER SHEET PILE WALL *	William Ashton Rock Island District		713-G1-F5-010	G-225 Batch -600 TSS INFONET 1108	X		This program will analyze a cantilever sheet pile wall in sand which depends solely on its embedment for stability. The program is written for the full flood condition.
MOMENT DISTRIBUTION	William Ashton Rock Island District		713-G1-F5-020	G-225 Batch G-600 TSS G-437 TSS FORTRAN	X		This program will distribute fixed-end moments for continuous beams without haunches and with less than 10 spans. The program will solve for both pinned and fixed-end conditions.
CONCRETE GENERAL** FLEXURE ANALYSIS†	Seattle District Leonard Gloeb St. Paul District		713-G1-F5-030	G-225 Batch G-437 TSS & Batch G-635 TSS & Batch INFONET UNIVAC 1108 FORTRAN	X		This program will analyze any shaped concrete or reinforced concrete section subjected to an axial load with symmetrical or unsymmetrical bending.

* Also available from the Rock Island District (713-F7-F4-41A).
** Also available from North Pacific Division (713-G1-E0-011).
† Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
T-TYPE RETAINING WALL	S. A. Williams Rev. by: Gerald Cohen St. Paul District		713-G1-F5-040	G-225 Batch G-437 TSS Batch G-635 TSS Batch INFONET UNIVAC 1108 FORTRAN	X		This program obtains an optimum section of a T-Type retaining wall as required for overturning stability for a given loading condition and determines the base pressure moments, and shear for use in designing the wall components.
SYMMETRICAL U-STRUCTURE ON AN ELASTIC FOUNDATION	W. M. Rankin R. L. Renner Leonard Gloeb St. Paul District		713-G1-F5-050	G-225 Batch FORTRAN II	X		The program will analyze a symmetrical U-shaped structure loaded symmetrical and supported on an elastic foundation.
T-TYPE FLOOD WALL	S. A. Williams St. Louis District Leonard Gloeb St. Paul District		713-G1-F5-060	G-225 Batch FORTRAN II	X		The program obtains an optimum section of a T-Type flood wall as required for overturning stability and determines the base pressure moments and shears for use in designing the wall component.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
RECTANGULAR CONCRETE GATE WALL DESIGN	R. L. Lapp Kansas City District		713-F1-F5-070	G-225 Batch FORTRAN II		X	The program defines required thickness of concrete and amount of steel reinforcement at any location in the structure.
OBLONG CONDUIT STRUCTURE ANALYSIS AND DESIGN	Gerald L. Cohen Michael B. Downs St. Paul District		713-G1-F5-080	G-225 Batch FORTRAN II		X	The purpose of this program is to define the required thickness of concrete and amount of steel reinforcement at any location in the oblong conduit for design purposes.
CANTILEVER SHEET PILE DROP STRUCTURE, COHESIONLESS SOIL	Marlin A. Munter St. Paul District		713-G1-F5-090	G-225 Batch FORTRAN II		X	This program will analyze a cantilever sheet pile drop structure which depends solely on its embedment in cohesionless soil for stability
LOCKWALL STABILITY ANALYSIS	CPT Camden W. McConnell Carl Johnson Rock Island District		713-G1-F5-120	G-225 Batch G-437 TSS Batch G-635 TSS Batch INFONET UNIVAC 1108 FORTRAN II	X		Stability analysis of navigation lockwalls for loading cases given in EM 1110-2-2602.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GEOMETRY OF TUNNEL TRANSITION STRUCTURES FOR OUTLET WORKS*	Edward A. Stone Huntington District Rev. By: G. L. Cohen St. Paul District		713-G1-F5-100	GE-225 Batch FORTRAN II			This program computes the interior geometry for the transition between a two or three sluiced intake structure and a circular outlet tunnel.
BOX CULVERT DESIGN - ONE CELL**	Walter T. Miller Vicksburg District Rev. By: Terry Johnson and Gerald L. Cohen St. Paul District		713-G1-F5-110	GE-225 Batch FORTRAN II	X		The program determines the minimum thickness of the horizontal and vertical members and the area of reinforcing steel to provide for moment and the required factor of safety for cracking load for shear.

* Also available from Huntington District.
** Also available from Vicksburg District (713-G9-A4-060).

NORTH PACIFIC DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
POWERHOUSE STABILITY ANALYSIS	R. L. Willey North Pacific Div.		713-K5-G0-010	IBM/360 Batch FORTRAN IV		X	The program analyzes the loads acting on a powerhouse for evaluation of its stability.
ICES - STRUDL II* **	MIT Civil Engineering, North Pacific Division		802-K5-G0-800	IBM 360/50 Batch FORTRAN IV	X		This program performs static and dynamic analysis for 2-D and 3-D structural systems. It also has member selection capabilities.

* Also available under "Programs from other Sources."
** Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GRAVITY DAM STABILITY ANALYSIS	John Penzien Kenneth Harvey Alaska District		713-K5-G1-040	IBM 360/50 Batch FORTRAN	X		This program uses the Finite Element Paint Method for gravity dam stability analysis and can be used for design of any gravity dam non-overflow and spillway sections.
PENSTOCK STEEL LINER OPTIMIZATION	Marker & DeVilbiss Alaska District		713-K5-G1-100	IBM 360/50 Batch FORTRAN IV			The program will determine the optimum steel type, liner thickness, quantities of steel, concrete, and excavation, and cost analysis of the same.
SECTION PROPERTIES FOR IRREGULAR SHAPES	1 LT Gene Unger William Wheeler Portland		713-K5-G2-210	IBM 360/50 Batch FORTRAN IV			This program takes any sectional shape and calculates the area, centroid, and moment of inertia values.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CONCRETE GENERAL FLEXURE ANALYSIS (CGFA) * **	E. T. Cates, SWGAD H. L. Miller, NPS Rev. by: G. W. Ploudre Seattle District		713-K5-G3-010	IBM 360/50 Batch FORTRAN IV	X		Elastic analysis of combined axial load plus biaxial bending due to the axial load on a cracked section.
ANALYSIS OF CONTINUOUS BEAMS FOR HIGHWAY BRIDGES**	Jose Nieves - Olmo Rev. by: Glenn Sikes, Georgia State Highway Dept. Seattle District.		713-K5-G3-020	IBM 360/50 Batch FORTRAN IV	X		This program analyzes from two to eight spans, in any material, using the 1971 AASHTO.
GRAVITY DAM STABILITY PROGRAM NON-OVERFLOW SECTION (STABAN)	Paul D. Breeding James W. Dahlen Seattle District		713-K5-G3-040	IBM 360/50 Batch FORTRAN	X		Gives a complete stability analysis for all six loading conditions as defined by the U. S. A. C. E. manual EM 1110-2-2200, 25 Sep 1958.
ULTIMATE STRENGTH DESIGN OF REINFORCED CONCRETE COLUMNS	G. W. Ploudre Seattle District		713-K5-G3-300	IBM 360/50 Batch FORTRAN IV	X		Designs conforms with the general requirements of the ACI Building Code.
FINITE ELEMENT EQUILIBRIUM MODEL PLANE STRESS PLANE STRAIN	George W. Ploudre James W. Dahlen Seattle District		713-K5-G3-480	IBM 360/50 Batch FORTRAN	X		Offers an accurate solution to the plane problem without any restrictions as to the shape of the plate.

* Also available from North Atlantic Division (713-F3-E0-010).
** Also listed in "Programs from other sources."

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF 2-D FRAME STRUCTURES* **	Doherty & Wilson University of CA Rev. by: Grant L. Anderson Walla Walla District		713-K5-G4-110	IBM 360/50 Batch FORTRAN IV	X		Joint deflections, member end forces and joint reactions are determined for plane frames which may be subjected to joint loads, joint displacements and member loads.
2-D STABILITY ANALYSIS	James E. Krussel Walla Walla District		713-K5-G4-400	IBM 360/50 Batch or TSS	X		Analyzes a monolith with or without applied loads for stability in two dimensions.
FINITE ELEMENT METHOD STRESS ANALYSIS†	Dr. Ray Claugh & Dr. Edward Wilson Univ of CA, Berkeley Marvin Brammer Walla Walla District		713-K5-G4-710	IBM 360/50 Batch	X		Finite element techniques to determine internal displacements and stresses in 2-D plane stress or plane strain problems.
FINITE ELEMENT ANALYSIS OF STIFFENED PLATES	Ian G. Buckle Univ of CA James Krussel Walla Walla District		713-K5-G4-720	IBM 360/50 Batch FORTRAN IV	X		The program makes an analysis of highway girder bridge decks of arbitrary geometry.
GENERAL STRUCTURAL ANALYSIS PROGRAM	Dr. E. L. Wilson Univ of CA James Krussel Walla Walla District		713-K5-G4-790	IBM 360/50 Batch FORTRAN	X		This program performs linear, elastic analysis of 3-D structural systems.

* Also available from Omaha District (713-M1-C2-200).
** Recommended.
† Also available from Waterways Experiment Station (713-F3-R0-013).

OHIO RIVER DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
STABILITY ANALYSIS OF NAVIGATION LOCK WALL (LWALL)	William Galyean Huntington District	WESLIB	713-F3-H1-014	Honeywell G-635 TSS FORTRAN	X		Selects the base width heel and toe dimensions of lock walls for foundation pressure, stability, and sliding criteria. Will consider up to 10 loading conditions and permit reverse rotation between the various loading conditions.
T FRAME*	Robert E. Brittain Memphis District		713-F5-H1-051 (713-H1-051)	GE-440 FORTRAN	X		Version of G Frame.
LOCATION OF TAINTER CREST GATE SILL	*William Galyean* Huntington Dist.		*713-G1-H1-061*	*G-225* Batch FORTRAN	*X*		*The program was developed to provide a solution for the intercept location of the circular arc of a tainter gate and the curve of the sill profile equation is* $(F)_y = X^{1.85}$
WEIGHT & C. G. OF TAINTER CREST GATE	W. E. Galyean Huntington District		713-G1-H1-071 (713-21-071)	G-225 FORTRAN	X		Determines weight & centroid for tainter crest gates.
DESIGN OF THREE GIRDER TAINTER DATE	W. E. Galyean Huntington District		713-F5-H1-102 (713-H1-102)	GE-440 FORTRAN	X		Selects strut & girder sides to provide optimum design for the combination of 3 frames.

* Originally from the Memphis District.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CONCRETE BOX CULVERT FRAME ANALYSIS AND DESIGN*	Jack L. Miller Albuquerque, N.M. William Galyean Huntington Dist.		713-F3-H1-111	G-400 Batch FORTRAN	X		This program provides a rapid analysis and design of simple frame reinforced concrete structures, inclosing concrete conduits or culverts under high fills and a variety of other structures with pinned or fixed ends.
TAINTER GATE FRAME DEFLECTION AND TEMPERATURE STRESSES	W. E. Galyean Huntington District		713-G1-H1-121 (713-21-121)	G-225 Batch FORTRAN		X	Determines deflection and temperature stresses for applied loading.
T FRAME PLOT	William D. Martin Huntington District		713-G1-H1-13P (713-21-13P)	G-225 Batch FORTRAN	X		Plot of moment and shear diagrams for TFRAME.
MULTIPLE COLUMN PIER ANALYSIS	Georgia Highway Dept. W. E. Galyean		713-T1-H1-141 (713-91-141)	IBM 370 FORTRAN	X		Design reinforced concrete bridge piers.
STRENGTH DESIGN OF R/F CONCRETE SECTION (PCAUL)	Portland Cement		713-T1-H1-151 (713-91-151)	IBM 370 FORTRAN	X		Designs R/C compression members for axial loads
FESS 41**	N. Radhakrishnan WES W. E. Galyean		741-S8-H1-274 (741-61-274)	UNIVAC 1108 FORTRAN	X		Finite Element Method of Analysis-Soil System.
THREE GIRDER TAINTER GATE OPTIMUM GIRDER SPACING	W. E. Galyean Huntington District		713-G1-H1-311 (713-21-311)	G-225 Batch G-635 FORTRAN	X		Computes girder spacing which will balance negative moments.

* Also available from Albuquerque District (713-G1-M1-070).
** Also available from Waterways Experiment Station (713-Fe-R0-10A).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
DEAD LOAD DEFLECTION	W. E. Galyean Huntington District		713-G1-H1-321 (713-21-321)	G-225 Batch GE-400 FORTRAN	X		Computes beam deflection, due to uniform load for variable moment of inertia.
DESIGN OF CIRCULAR TUNNELS * **	Jean LePage M. M. Harter and Richard Herndan Kansas City District Rev. by: Ed Stone Huntington District		713-G1-H1-321 (713-21-322)	G-225 Batch FORTRAN	X		Program determines the optimum dimensions of a reinforced concrete tunnel subject to given external loads. This tunnel is for use in the Outlet Works U.S.C.E. dams. The optimum dimensions are those: 1. which generate the smallest units value of 2. Which develop moments, thrust, and shears that will produce unit stresses within designed limits.
CONTINUOUS BEAM ANALYSIS FOR HIGHWAY BRIDGES	W. E. Galyean Huntington District		713-F5-H1-34P (713-H1-34P)	G-437 FORTRAN	X		Designs cover plates & flanges for basic web section for Highway Bridges, computes all characteristics.

* Originally from Kansas City District (13-J2-C1-08).
** Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
AISC COLUMN DESIGN*	American Institute of Steel Construction		713-F5-H1-351 (713-H1-351)	GE-440 FORTRAN	X		Select columns for axial loading plus bending.
GEOMETRIC SOLUTION OF HIGHWAY BRIDGES	Georgia Department of Highways		713-F5-H1-361 (713-H1-361)	GE-440 FORTRAN	X		Solves geometrics required in bridge design.
ANALYSIS OF CONTINUOUS BEAMS FOR HIGHWAY BRIDGES*	Georgia Dept. of Highways W. E. Galyean Huntington District		713-T1-H1-371 (713-91-371)	IBM 370 FORTRAN IV	X		Performs complete analysis of continuous beams for Highway Bridges
FEM WILSONS CODE**	E. L. Wilson University of CA W. E. Galyean Huntington District		713-S8-H1-424 (713-61-424)	UNIVAC 1108 FORTRAN	X		Finite Element Method of Analysis.
PTRUSS † ††	Robert Brittian Memphis District W. E. Galyean Huntington District	CORPS	713-F5-H1-441 (713-H1-441)	GE-440 GE-635 Batch FORTRAN	X		Analyses planar pinned trusses for multiple loading.
CONDUIT ANALYSIS	Bob Alder St. Louis District W. E. Galyean Huntington District		713-G1-H1-471 (713-21-471)	G-225 Batch FORTRAN	X		Analyze conduit sections with varying loads.
STRESS ANALYSIS OF TUNNEL OR CONDUIT	W. D. Barnes Huntington District		713-F5-H1-481 (713-H1-481)	GE 440 FORTRAN	X		Stress analysis of a concrete tunnel conduit.

* Also listed under "Programs from other Sources."
** Also available from Waterways Experiment Station (713-F3-R0-013) and Nashville District (713-F5-H3-100).
† Also available from the Memphis District (713-G9-A1-050).
†† Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FATIGUE STRESS INPUT DATA	W. E. Galyean Huntington District		713-G1-H1-51P (713-21-51P)	G-225 Batch FORTRAN		X	Prepares data to be used in plot programs which draws charts for allowable fatigue stresses for cyclic loading.
FEM EDIT AND PLOT PACKAGE	N. Radhakrishnan WES William Galyean Huntington District		713-F3-H1-57P (713-H1-57P)	G-635 Batch FORTRAN	X		Finite element method edit and plot package.
FLOODWALL STRUCTURAL AND SLIDING STABILITY	C. Powers & E. G. Metka Louisville Dist.		741-G1-H2-010 (741-22-010)	G-225 Batch FORTRAN	X		Makes structural (overturning) and sliding stability (by creep method) analysis of floodwalls.
CONTINUOUS BEAM ANALYSIS FOR HIGH-WAY BRIDGES	Version of Wisconsin State Prog./ Edward G. Melka Louisville District		713-F3-H2-04P (713-H2-04P)	Infonet TSS UNIVAC 1108 FORTRAN	X		Computes beam characteristics dead load moments, shears, live load moments, shears reaction based on AASHTO specifications and design coverplates for web section.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
VARIABLE SECTION CONDUIT ANALYSIS*	Joseph Hill & John Tang Tulsa District/ Edward G. Metka Louisville District		713-F3-H2-090 (713-H2-090)	G-225 Batch FORTRAN	X		To determine moments, shear, thrust, concrete stress, and required steel area for a conduit of variable section with water and/or earth loading.
INDETERMINATE PILE ANALYSIS - 3D by MATRIX METHOD** †	Thomas Mudd St. Louis District E. G. Metka Louisville District		713-F3-H2-160 (713-H2-160)	G-437 Batch FORTRAN	X		General method of analysis by direct stiffness of 3-D pile foundations.

* Also available from Tulsa District.
** Also available from St. Louis District (713-F1-A3-840).
† Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GFRAME* **	Robert Brittain Memphis District/ E. G. Metka Louisville District	ECPL	713-S8-H2-220 (713-82-220)	Infonet TSS Univac 1108 FORTRAN	X		Analysis of planar rigid frames.
VARIABLE SECTION CONDUIT ANALYSIS	E. G. Metka Louisville District		713-K2-H2-230	HONEYWELL G-225 Batch FORTRAN	X		The program was written to design a variable section conduit with water and/or earth loading.
ORTHOGONAL FRAME	Dr. W. Brian Vanderbilt Univ. Jack Hoffmeister Nashville District		713-F3-H3-010 (713-H3-010)	FORTRAN		X	Finds reactions, moment shears, deflections, of a plane orthogonal frame.

* Also available from the Memphis District (713-F5-A1-040).
** Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
LAND WALL STABILITY *	W. E. Galyean Huntington District Rev. By: Barney Johnson Nashville District		713-G1-H3-020 (713-23-020)	G-225 Batch FORTRAN		X	Finds resultant forces for land lock wall, with earthquakes.
LOCK WALL STABILITY **	W. E. Galyean Huntington District Rev. By: Barney Johnson Nashville District		713-G1-H3-030 (713-23-030)	G-225 Batch FORTRAN		X	Same as Land Walls program but with river or middle walls.
HORIZONTAL GIRDER ANALYSIS	Jack Hoffmeister Nashville District		713-G1-H3-040 (713-23-040)	G-225 Batch FORTRAN		X	Useful for miter gates, computes axial stresses, allowable bending compressive stress of stem, and combined stresses.
CONCRETE COLUMN STRESS	Jack Hoffmeister Nashville District		713-F3-H3-050 (713-H3-050)	G-225 Batch FORTRAN		X	Finds concrete and steel stresses in any round or rectangular section.

* Also available from Huntington District (713-G1-H1-013).
** Also available from Huntington District (713-G1-H1-011).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
HAMMERHEAD COLUMN ANALYSIS	Jack Hoffmeister Nashville District		713-G1-H3-060 (713-23-060)	G-225 Batch FORTRAN		X	Finds moments and shears at various sections for eccentric load.
POWERHOUSE STABILITY	Jack Hoffmeister Nashville District		713-G1-H3-070 (713-23-070)	G-225 Batch FORTRAN		X	Loads a power house and find bearing pressures.
HRENNIKOFF PILE METHOD	Lucian Guthrie OCE John Lambrecht Nashville District		713-G1-H3-090 (713-23-090)	G-225 Batch FORTRAN		X	Loads a group of piles, finds axial and lateral per pile and displacements of footings.
PILE FOUNDATION ANALYSIS	John Lambrecht Nashville District		713-23-091	G-225 Batch FORTRAN		X	Loads a group of piles, with various pile fixities and finds resultant forces.
ANALYSIS OF CIRCULAR COFFERDAM AND MOORING CELL FOUNDED ON ROCK	Walter Green Randal Warren Nashville District		713-G1-H3-190 (713-23-190)	GE-225 FORTRAN		X	Analyzes a given circular steel sheet pile cofferdam or mooring cell founded on rock, using methods presented in U. S. Steel's "Steel Sheet Piling Design Manual"
FEM WILSON'S CODE*	Dr. E. L. Wilson Univ of CA John Lambrecht Nashville District		713-F5-H3-100 (713-H3-100)	HONEYWELL G-635 Batch FORTRAN	X		Finite Element Method of Analysis.

* Also available from Waterways Experiment Station (713-F3-RO-013) and Huntington District (713-S8-H1-424).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- UCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
LOCK WALL STABILITY ANALYSIS	W. R. Noullet and L. R. Hoy Pittsburgh District		713-F7-H4-030 (713-24-030)	G-225 Batch FORTRAN	X		Investigates lock walls for stability.
LOCK CULVERT WALLS	W. R. Noulett-Ardine Pittsburgh District		713-F7-H4-040 (713-24-040)	G-225 Batch FORTRAN		X	Computes moments & forces for steel design
GRAVITY DAM STABILITY*1	Paul D. Breeding Seattle District L. R. Hoy Pittsburgh District		713-F7-H4-050 (713-24-050)	G-225 Batch FORTRAN	X		Analysis overflow of gravity sections.
RETAINING WALL DESIGN*2	General Electric/ Pittsburgh District		713-F7-H4-170 (713-24-170)	G-225 Batch FORTRAN	X		Design reinforcement for retaining walls.
COFFERDAM SLIDING STABILITY	Anton Krysa Pittsburgh District		713-F7-H4-300 (713-24-300)	G-225 Batch FORTRAN	X		Investigates cofferdam sliding below rock.

* Also available from Seattle District (713-K5-G3-040).
** Also listed in "Progress from other sources."

SOUTH ATLANTIC DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ANALYSIS OF VERTICAL LIFT GATE	/Donald L. Phillips Jacksonville District	GSA at Atlanta	GS 10	GE 225 Batch FORTRAN IV	X		Analyzes the structural ability of a vertical lift gate by computing the moments, reactions, and stresses within the gate and the roller reactions, on the gate which result from specified loading conditions.
INTERSECTION OF SPILLWAY AND TAINTER GATE	/Harold Willet Savannah District		713-G1-K5-140	GE 225 Batch FORTRAN IV		X	Computes the coordinates of the point of intersection of Tainter Gate and Spillway and the angle between the vertical and tangent to the point of intersection.
U-FRAME STRUCTURE DESIGN	James B. Gaines, Jr. Malcolm J. Babb /Virginia Williams Mobile District		713-S8-K5-180	Univac 1108 Batch FORTRAN IV	X		Provides a preliminary design of a reinforced concrete stilling basin or other concrete U-frame structure. Computes and prints out - 1) Member sizes 2) forces and moments on members 3) areas and perimeter of reinforcing steel required at various locations.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
THREE DIMENSIONAL PILE FOUNDATION ANALYSIS	Captain J. Gorman Schaffer, Jr. /Virginia Williams Mobile District		713-S8-K5-280	Univac 1108 Batch FORTRAN IV	X		Provides analysis of pile foundations resisting 3-D forces. Batter piles are acceptable but the angles of batter are limited to one plane. A given pile foundation can be analyzed for a number of different loading conditions. The axial and transverse loads acting on any pile within the foundation can be found.
GATED SPILLWAY STABILITY	Captain J. Gorman Schaffer, Jr. /Virginia Williams Mobile District		713-S8-K5-290	Univac 1108 Batch FORTRAN IV		X	Provides a 3-D stability investigation of an intermediate pier monolith.
MITER GATE DESIGN *	C. Jackson Grande, Jr. Mobile District	ECPL	713-S8-K5-300	Univac 1004-1108 G-225 G-400 FORTRAN IV	X		"Miter Gate Design." Automation of EM 1110-2-2603, Lock Gates (draft).

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TRUSS ANALYSIS	C. Jackson Grande, Jr. David F. McDonald /Virginia Williams Mobile District		713-S8-K5-301	Univac 1108 Batch FORTRAN	*		Structurally analyzes a joint-loaded truss, furnishing: a) axial member forces b) axial member stresses c) joint displacements (allows determination of changes in member lengths), and d) joint rotations.
LOCKWALL STABILITY ONE FOOT SECTION	Captain J. Gorman Schaffer, Jr. /Virginia Williams Mobile District		722-J2-K5-180	Univac 1108 Batch FORTRAN V Can be compiled on FORTRAN IV compiler	X		A 2-D static investigation of a typical lockwall chamber section and modifies the back slope of the section until the resultant of the normal loading conditions fall inside the kern. Provides forces; resultant of forces and moments; base pressures and shear-friction safety factor; base pressure adjustment if part of the base is not in compression for individual loading conditions.

* Partially documented.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
LOCKWALL STABILITY MONOLITH INVESTIGATION	Charles W. Kling Virginia Williams Mobile District		722-S8-K5-240	Univac 1108 Batch FORTRAN	X		Provides a 3-D static stability investigation of most lockwall monoliths.
FRAME ANALYSIS	C. Jackson Grande David F. McDonald Vriginia Williams Mobile District		None	Univac 1108 Batch FORTRAN IV		X	Analyzes frames, furnishing shears, moments, and deflections. Modified version of GENSAP developed for the Huntsville Division.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BATTER PILE ANALYSIS-HRENNIKOFF	R. W. Powers Thomas J. Durrence Savannah District		713-G1-K6-020	GE-225 Batch FORTRAN			Program computes the pile constants based on any pile section required to be used in further computation of the longitudinal and transverse loads, compiles three equations, solves them simultaneously for the reduced foundation movements and computes the axial load, shear and moment for the battered or vertical piles. Analysis is made for fixed and pinned end conditions.
SPREAD FOOLING DESIGN WORKING STRESS	Fred J. Kitchens Savannah District		713-G1-K6-050	GE-225 Batch FORTRAN II			Determines the depth, required reinforcement size and spacing and actual bearing pressure for a footing of a given size with given loads and allowable bearing pressure.
TWO COLUMN BENT HIGHWAY BRIDGE *	F. J. Kitchens,Jr. Revised by: Bob Halliburton Savannah District		713-G1-K6-080	G-225 Batch FORTRAN	X		The program determines the moments, shears, and reactions necessary for the design of a two column highway bridge bent with or without a strut at the base of the columns.

* Also available from Little Rock District (713-G1-M4-350).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CIRCULAR OR OBLONG SHAPE CONDUIT DESIGN UNDER HIGH FILLS.	Fred Kitchens Bob Halliburton /Savannah District		713-G1-K6-350	GE-225 Batch FORTRAN II			Computes the moments, thrusts, shears, steel required, concrete stress, steel stress and diagonal tension stress at 15-degree increments around the conduit for a given radius, concrete and loading condition.
OVERFLOW MONOLITH STABILITY	B. J. Halliburton /Savannah District		713-G1-K6-370	GE-225 Batch FORTRAN II			Determines the stability of an overflow monolith at the plane of the base and at any horizontal plane up to and including the plane where the pier toe intersects the curve of the weir. The program will compute the stability of a weir only on ungated spillway with piers for bridge support, and a gated spillway with piers for bridge support, and a gated spillway with piers for bridge support, and a gated spillway. It will compute the (Cont'd.)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
OVERFLOW MONOLITH STABILITY (Cont.)							stability for the constriction condition, normal operating condition, induced surcharge condition, flood discharge condition, and a maintenance condition all simultaneous or either one or ones as desired.
NON-OVERFLOW OR INTAKE MONOLITH STABILITY	B. J. Halliburton Savannah District		713-G1-K6-380	GE-225 Batch FORTRAN II			Determines forces, moments and location of the resultant for either a non-overflow or intake monolith. Computes the stability at any given horizontal plane through the monolith as well as at the base. Wind, wave, headwater, tailwater, upstream soil, downstream soil, uplift, mass forces, and base stresses are all computed.
CULVERT DESIGN	Larry Colbert North Carolina Division of Highways Rev. by: Fred Kitchens Savannah District		713-G1-K6-500	GE-225 Batch FORTRAN II			Designed single or multiple box culvert, knowing the span height and fill. It will also give the bar schedule as an option, knowing the length and end skews.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TRUSS ANALYSIS DEAD AND LIVE LOADS	J. Patrick Vennari, Jr. Kenneth R. Keller Revised by: /Jim Waller Wilmington District		713-X6-K7-010 (713-010)	CDC-7600 FORTRAN II	X		Analyzes a 2-D truss for stationary and moving loads, by stiffness method.
COMPOSITE PRESTRESSED GIRDER	Larry A. Colbert, North Carolina Division of Highways /Larry Mitchel Wilmington District		713-K8-K7-050 (713-050)	IBM 370/165-PL/1	X		Designs or analyzes a composite pretensioned prestressed concrete girder for a simple span. Girder may be AASHTO 36, 45, or 54-inch depth.
COMPOSITE I-BEAM DESIGN	Larry A. Colbert, North Carolina Division of Highways /Larry Mitchel Wilmington District		713-K8-K7-060 (713-060)	COBOL IBM 370/165	X		Designs one or more rolled steel I-Beams, with or without cover plates, suitable for a given span, slab, beam spacing and live load.
COMPOSITE PLATE GIRDER DESIGN	Larry A. Colbert North Carolina Division of Highways /Larry Mitchel Wilmington District		713-K8-K7-070 (713-070)	IBM 370/165 PL/1	X		Designs composite of non-composite plate girders.
BENT CAP ANALYSIS	North Carolina Division of Highways /Larry Mitchel Wilmington District		713-K8-K7-080 (713-080)	IBM 370/165 PL/1	X		Analyzes Bridge Bent Caps as a continuous beam.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BOX CULVERTS	Larry A. Colbert, North Carolina Division of Highways /Larry Mitchel, Wilmington District		713-K8-K7-090 (713-090)	IBM 360/75	X		Designs reinforced concrete box culverts.
BRIDGE LAYOUT AND ELEVATIONS	Larry A. Colbert, North Carolina Division of Highways /Larry Mitchel, Wilmington District		713-K8-K7-100 (713-100)	IBM 370/165 PL/1	X		Runs a variety of jobs associated with the layout and elevations of a bridge. Also used for retaining walls.
BAR SCHEDULE	North Carolina Division of Highways /Larry Mitchel, Wilmington District		713-K8-K7-110 (713-110)	IBM 360/75	X		Computes bar weights and lists the results in a format (to include in plans).

SOUTH PACIFIC DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
DESIGN OF SINGLE RECTANGULAR REINFORCED CONCRETE CONDUIT	C. Stephenson Los Angeles District		713-X6-L1-001	GE 437 CDC 7600	X		Program designs rectangular reinforced concrete conduits subject to various internal and external loads. Computes the following values: Fixed end moments, distributed moments, shear thrust, reactions, required effective depth of slabs and walls, design moments, K values required steel areas, required parameter of steel, and final thickness of slabs and walls. Program may also be used for investigation.
DESIGN OF CHANNEL T-WALL	C. Stephenson Los Angeles District		713-X6-L1-002	GE 437 CDC 7600	X		To design a reinforced concrete channel T-Wall section. Program computes required base length. Channel overturning, sliding, and toe and heel pressures. Designs thickness for toe, heel, and stern and calculates the required area of steel for the governing loading condition.
CULVERT ANALYSIS	C. Stephenson Los Angeles District		713-X6-L1-003	GE 437 CDC 7600	X		To analyze a single, double, or triple box culvert section by moment distribution. Program computes fixed end moments and simple beam (ξ) moment for dead load, (Cont'd.)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CULVERT ANALYSIS (Continued)	C. Stephenson Los Angeles District		713-X6-L1-003				lateral earth pressure, live load and live load surcharge. Program may also be used to distribute moments due to any other loading condition, e.g., internal water load concentrated loads, etc., if the fixed end moments and simple beam (ξ) moments are entered in addition to or in place of loading conditions. Sidesway is computed for every condition.
DESIGN OF CHANNEL L-WALL	C. Stephenson Los Angeles District		713-X6-L1-004	GE 437 CDC 7600	X		To design a reinforced concrete channel section for the case where half the width of channel is equal to or greater than the height of the wall. The program results in computation of moments at 1-foot intervals with area of steel and K-values for the corresponding moments for the channel empty, full or any intermediate water depth.
DESIGN OF CHANNEL U-WALL	C. Stephenson Los Angeles District		713-X6-L1-005	GE 437 CDC 7600	X		To design a reinforced concrete channel section for the case where the width of channel is less than twice the height of wall. The program results in computation (Cont'd.)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
DESIGN OF SIMPLE SPAN COMPOSITE BEAM (QUARTER POINTS)	C. Stephenson Los Angeles District		713-X1-L1-017	GE 225 Batch FORTRAN	X		Select and design the most economical girder section for simple-span composite bridge design. Given a particular span length, the most economical girder section may be chosen by comparing individual girder weights for various web depths, stringer spacings, or slab thickness.
CANSHE	Hradilek and Lizardi Computer Science Corporation /Raymond J. Pensak Los Angeles District	X	Computer Sciences Corporation Terminal (INFONET)	FORTRAN IV for Univac 1108 Computer	X		Computes stress and depth of penetration for cantilever sheet piling under soil and surcharge load.
L-WALL	Hradilek and Lizardi Computer Science Corporation /Raymond J. Pensak Los Angeles District	X	Computer Sciences Corporation Terminal (INFONET)	FORTRAN IV for Univac 1108 Computer	X		Design of channel "L" Wall under combinations of soil and water loads and live load surcharge.
PSBRG	Computer Science Corporation /Raymond J. Pensak Los Angeles District	X	Computer Sciences Corporation Terminal (INFONET)	FORTRAN IV for Univac 1108 Computer	X		Design of prestressed sections for railroad and highway bridges.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
LINER	J. White Sacramento District		713-G1-L2-02C	G-225 Batch FORTRAN II	X		Program analyzes and/or designs cylindrical steel tunnel liners. For external pressure the shell is assumed to be confined in a rigid cavity; stiffener rings are incorporated as needed. For internal pressure, division of load between liner and rock is based upon OCE criteria established for New Melones Project. Plane strain is assumed.
PRINSTRESS	Haavisto Sacramento District		713-G1-L2-213Z	G-225 Batch FORTRAN II	X		Program converts strain rosette readings to stress-strain data. Rosette may be rectangular (45°) or delta (60°). At each rosette location, program computes principal strains, principal stresses, direction of maximum principal stress. In addition, program computes strains and stresses in a local X-Y rectangular coordinate system. Program was developed for hydro-testing of New Melones bifurcations, but has general application.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
SAPIV * **	Klaus-Jürgen Bathe Edward L. Wilson Fred E. Peterson University of California, Berkeley Robert Haavisto Sacramento District		713-X6-L2-21A	CDC 7600 Batch @ LBL FORTRAN IV	X		General finite element program for static and dynamic analysis of linear elastic structural systems. Element library includes 3-D truss, 3-D beam isoparametric 21 node 3-D solid/thick shell, isoparametric thin shell, axisymmetric solid, 3-D pipe, boundary spring. Time-history and spectral analysis capability. Currently no graphics.
CONTINUOUS GIRDER ANALYSIS†	General Electric		713-G1-L2-23A 713-G1-L2-23B	G-225 Batch FORTRAN II	X		Computes influence line ordinates for reactions, shears and moments in continuous beam up to 5 spans. Program "A" places unit load at ten points of each span, computes reactions, shears and moments of each support as well as moment at point of load. Program "B" use results from "A" to compute moments at every tenth point of each span.

* Also available from WES.
** Recommended.
† Also listed in "Program from other sources."

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GENSAP * **	Agbabian-Jacobsen Associates El Segundo, California B. Haavisto Sacramento District		713-X6-L2-31A	CDC 7600 Batch @ LBL FORTRAN IV	X		General elastic and nonlinear finite element structural analysis program. Element library includes 3-D truss, 3-D beam, plane strain, plane stress, axisymmetric solid, 3-D solid, thin plate/ shell, boundary spring static and dynamic analysis, including time-history and spectral analyses. Limit graphics in pre- and post-processor.
CYLSHELL-1	Robert Haavisto Sacramento District		713-G2-L2-33A	G-437 Batch FORTRAN		X	Program analyzes thin, cylindrical shell of constant thickness, subjected to axisymmetric loads and boundary condition. Analysis is based on material from "Theory of Plates and Shells" by S. Timeshonke.
TUNNEL SECTION ANALYSIS BY ELASTIC CENTER METHOD	Robert Haavisto Sacramento District		713-G1-L2-48C	G-225 Batch FORTRAN II		X	Program computes internal moments, thrusts and shears in a closed-rib type concrete tunnel section subject to external pressure. Analysis is by method of elastic centers, and is a modification of Metcalk and Eddy technique in the PCA pamphlet "Analysis of Arches, Rigid Frames and Sewer Sections."

* Also available from Huntsville Division (713-C8-70-06F).
** Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
NONSAP	Klaus-Jürgen Bathe Edward L. Wilson Robert H. Iding University of California, Berkeley Robert Haavisto Sacramento District		No number	CDC 7600 Batch @ LBL FORTRAN IV	X		Finite element program for static and dynamic analysis of nonlinear structural systems. Element library consists of 3-D truss, 3-8 node isoparametric plane strain/stress, 3-8 node isoparametric axisymmetric solid, 8-21 node isoparametric 3-D solid/thick shell. Available analysis procedures are: 1) Linear Elastic; assumes small displacements, infinitesimal strain isotropic or orthotropic linear elastic material. 2) Materially Nonlinear; assumes small displacements, infinitesimal strains, nonlinear material stress-strain description. 3) Total Langrangian Formulation; element may experience large displacements and strains, stress-strain relationship is linear or nonlinear. 4) Updated Langrangian Formulation element may experience large displacements and strains, stress-strain relationship is linear or nonlinear. Program is designed for a general incremental (Cont'd.)

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
NONSAP (Cont'd.)							solution of nonlinear problems, but linear analyses are possible also.
U-WALL REINFORCED CONCRETE CHANNEL DESIGN	J. D. Helmick San Francisco District		713-G2-L3-001	IBM 360 or GE-415 Batch FORTRAN IV	X		Provides a rapid method of design for a cross-section of a reinforced U-walled channel.
ANALYSIS OF TWO-DIMENSIONAL FRAME STRUCTURES *	W. P. Doherty E. L. Wilson University of California Revised by: J. D. Rafferty San Francisco District	ECPL	713-G2-L3-002	IBM 360 G-415	X		This program provides an analysis of general two-dimensional frame problems.
CANTILEVER RETAINING WALL	J. D. Rafferty San Francisco District	ECPL	713-G2-L3-003	GE-400 Batch FORTRAN	X		This program investigates a given section or determines the dimensions and designs the reinforcing steel for a cantilever retaining wall.
MULTI-CELLED GATEWELL DESIGN	J. D. Rafferty San Francisco District		713-G2-L3-005	GE-400 Batch FORTRAN	X		Incorporate the two-dimensional frame analysis program. Determine concrete thickness and steel reinforcement at each design interval of wall length for a gatewell with a maximum of 5 cells.

* Recommended.

SOUTHWESTERN DIVISION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
ULTIMATE-STRENGTH ANALYSIS OR DESIGN OF VARIABLE-SECTION CONDUITS	Charles A. Rich Gerald C. Romero /Thomas F. Heldt, Jr. Albuquerque District	ECPL	713-GI-MO-090	G-225 Batch FORTRAN II	X		This program computes moments, thrust, shears, and factors of safety in shear, and combined axial load and flexure in single-barrel reinforced concrete conduits under high fills.
BEAM ON ELASTIC FOUNDATION	Joe Avant Albuquerque District		713-J2-MO-122	G-225 Batch FORTRAN IV		X	This program analyzes the base slab of a rigid "U" frame.
FLEXIBLE CULVERT PIPE-ARCH ANALYSES	Jack L. Miller /Thomas A. Heldt Albuquerque District		713-J2-M1-010	IBM 1620 G-225 Batch FORTRAN			The program uses the compression ring theory to compute seam strength, soil pressures, and gauge of pipe required.
INDETERMINATE FRAME ANALYSIS (CONCRETE BOX CULVERT AND DESIGN)*	Jack L. Miller Albuquerque District		713-G1-M1-070	IBM 1620 Batch Honeywell G-222 G-437 Batch G-635TSS FORTRAN	X		The program provides a rapid analysis and design of simple frame reinforced concrete structures, inclosing concrete conduits or culverts under high fills and a variety of other structures with pinned or fixed ends.

* Also available from the Huntington District (713-F3-H1-111).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
EPVKS1	Tom Jeffus Fort Worth District		713-G9-M2-064	Honeywell G-400 Batch G-635TSS FORTRAN		X	Design of U-Frame structure computes wall and slab moments and shears. Base pressure can be varied.
XSPRØP	T. Jeffus Fort Worth District		No number	G-635TSS FORTRAN IV			Computes geometric properties of any composite X-section.
BMCØL3	T. Jeffus Fort Worth District		No number	G-635TSS FORTRAN IV			Analyzes continuous beams on elastic foundations.
INVERTED T-FLOOD WALL STABILITY DESIGN	R. Veselka R. R. Petter Galveston District /W. A. Price Waterways Experiment Station	ECPL	713-G1-M3-060	G-225 Batch FORTRAN	X		Inverted T floodwall design/ analysis, in accordance with EM 1110-2-2501. Varies base width for minimum width for compliance with input criteria for stability, earth bearing pressure, creep ratio and stem ratio. Sloping base, key at heel. Wave force, earth slope, and surcharge input.
	Galveston District	ECPL	713-G1-M3-060A	G-225 Batch FORTRAN	X		Supplement A to program 713-G1-M3-060 (Inverted T Floodwall) calculates excavation width, concrete and earthwork quantities, and estimated cost of walls designed or analyzed by main program. Post-processor, linked by cards punched by main program plus added existing earth and cost data cards.

AD-A031 244 ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG MISS F/G 9/2
CORPS-WIDE CONFERENCE ON COMPUTER-AIDED DESIGN IN STRUCTURAL EN--ETC(U)
AUG 76 N RADHAKRISHNAN, D B MAY

UNCLASSIFIED NL

2 OF 2
ADA031244

END

DATE
FILMED
11 -76

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
	Galveston District	ECPL	713-G1-M3-060B	G-225	X		Supplement B to program 713-G1-M3-060 (Inverted T Floodwall). Prepares special data cards to force the main program to determine minimum base width for a retaining wall with ground water table below the finished grade elevation over the toe.
POSMO	W. A. Price Galveston District /Waterways Experiment Station	ECPL WESLIB	713-G1-M3-180	Honeywell G-225 Batch G-437 Batch FORTRAN	X		Links from program GFRAME (713-G1-A1-040) and calculates V, M, F axial at 1/10 points of each member for each load case. Call Wm. A. Price, FTS 601-636-3645 for information.
MDCF	W. A. Price WESKA	WESLIB ECPL	713-F3-M3-500	600TSS FORTRAN	X		Moment Distribution for prismatic members. Computer fixed-end moments, fixed-end shears, simple-span shears, and equivalent-FEM trapezoidal load for any superimposed combination of point loads and trapezoidal loads over any portion of the span.
SKNPL - Skin Plate System Design/ Analysis *	W. A. Price Waterways Experiment Station	WESLIB ECPL	713-F3-M3-510	G-635TSS FORTRAN	X		Analysis and/or design of an orthogonal, planar steel skin plate and composite Tee rib system.

* *Recommended.*

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
3-D FOUNDATION ANALYSIS - PHI BATTER	Bill James Charles Marak Little Rock District		713-G1-M413A	GE-225 Batch FORTRAN	*		Determines the individual pile loads for a group of piles including battered and vertical piles.
3-D PILE FOUNDATION ANALYSIS - BETA BATTER	Little Rock District		713-G1-M413B	GE-225 Batch FORTRAN	*		Supplemental program to 713-G1-M413A. Specifications same except: Third Dimensional batter in perpendicular plane is added.
TWO COLUMN BENT FOR HIGHWAY BRIDGE**	F. J. Kitchens Revised by: Bob Halliburton Savannah District W. C. Marak Little Rock District		713-G1-M4-350	Honeywell G-225 Batch FORTRAN		X	This program computes column data due to wind load, dead load and live load.
WALL STABILITY ANALYSIS AND PLOT	Frank Webster George Henson Tulsa District		713-G1-M5-300	G-225 Batch	X		The program computes a stability analysis of a retaining wall and makes a plot of the retaining wall stability analysis complete with wall section, load and force diagrams, resistance to sliding values, and notes, for use as a design memorandum plate.

* Partially documented.
** Also available from Savannah District (713-G1-K6-08).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TAINTER GATE LOADS AND REACTIONS *	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-MO-010	G-225 Batch G-635TSS FORTRAN	X		This program computes the sill location and slope, the dead load sill reactions, the dead load trunnion reactions, the wave loads, the wave load trunnion reactions, the trunnion reactions due to hydrostatic load. The cable pull, angle of pull, the location and length of contact and reactions due to cable pull are given for over-wound and under-wound hoist. Produces a summation of trunnion reactions for various cases.
TWO GIRDER TAINTER GATE INTERIOR RIB ANALYSIS *	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-MO-020	G-225 Batch G-635TSS FORTRAN	X		This program computes for a two girder tainter gate, the optimum girder spacing and the moments, shears, and reactions of the interior ribs.
TAINTER GATE EXTERIOR RIB ANALYSIS *	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-MO-030	G-225 Batch G-635TSS FORTRAN	X		Program computes the moments, shears and reactions for the exterior rib of a 2, 3, or 4 girder tainter gate under normal and stall torque cable tension.

* All of the above programs are available from H. Wayne Jones at Waterways Experiment Station.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TAINTER GATE RIGID FRAME ANALYSIS *	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-M0-040	G-225 Batch G-635TSS FORTRAN	X		This program computes the moments, reactions, axial loads and unit stresses for a tainter gate frame comprised of one (1) girder and two (2) struts.
OVERFLOW STABILITY ANALYSIS *	Dean B. Englund Tulsa District	SWD ECPL	713-G1-M0-050	G-225 Batch FORTRAN	X		This program computes the uplift pressures, the horizontal thrust, the crest pressure, the bucket forces, the resistances to sliding and the base pressures for a controlled or uncontrolled ogee weir monolith.
NON-OVERFLOW STABILITY ANALYSIS *	F. Webster G. Henson Tulsa District	SWD ECPL	713-G1-M0-060	G-225 Batch FORTRAN	X		This program computes the information necessary to analyze the stability of a non-overflow section.
FOUR-GIRDER TAINTER GATE INTERIOR RIB ANALYSIS * **	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-M0-070	G-225 Batch G-635TSS FORTRAN	X		This program computes for a four-girder tainter gate, the optimum girder spacing and the moments, shears and reactions of the interior ribs.
THREE-GIRDER TAINTER GATE INTERIOR RIB ANALYSIS *	Dean B. Englund Tulsa District	SWD LMVD ECPL	713-G1-M0-080	G-225 G-635TSS FORTRAN	X		This program computes for a three-girder tainter gate, the optimum girder spacing and the moments, shears and reactions of the interior ribs.

* All of the above programs are available from H. Wayne Jones at Waterways Experiment Station.
** Recommended.

WATERWAYS EXPERIMENT STATION PROGRAMS

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
GAIP (Program in progress)**	Dr. H. B. Wilson University of Alabama (William Price WES, CAB, ADPC)	WESLIB	704-F3-R0004	Honeywell G-635 TSS FORTRAN	X		Computes area, moments of inertia about coordinate axes, calculated volume of rotation of the area about any axis. The region to be calculated is defined by a series of line segments and circular arcs. Dr. H. B. Wilson. Plots area on terminal printer.
CGFA * **	W. A. Price WES	WESLIB	713-F3-R0010	Honeywell G-600 TSS FORTRAN	X		Concrete General Flex-Analysis. Uses cracked-section elastic analysis, with axial load plus bi-axial flexure. Control parameter also permit analysis of vase plates, contact bearing and homogeneous materials. Works from saved data file and prints results at terminal.

* Also available from North Atlantic Division (713-F3-E0-010).
** Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
CGFARD	W. A. Price WES	WESLIB ECPL	713-F3-R0011	Honeywell G-600 TSS FORTRAN	X		Round Section Data Generator for Program CGFA. Generate concrete and steel coordinate data fro program CGFA, Concrete General Flexure Analysis, to analyze a round cross section with optional concentric circular void and circular steel pattern.
SAP IV*	Ed Wilson, UC Bill Boyt WES		713-F3-R0012	600 BATCH	X		3-D structural analysis program for linear systems. Use finite elements for static and dynamic problems with approximate mode shapes for the dynamic option.
SAPBEAM	H. W. Jones WES	LMVD	713-F3-R0-A12	G-635 Batch	X		A modified general purpose structural analysis program (SAP4) that can automatically compute fixed end moments and shears on beam elements for in-span beam loads.

* Also available from Sacramento District (713-X6-L2-21A).

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FEMWIL	Dr. Wilson (UC) Radhakrishnan WES	LMVD WESLIB	713-F3-R0-013	G-600 TSS BATCH FORTRAN	X		Finite element analysis of plane stress structures. Computes stresses and deformations. University of California.
BENT1 *	(Dr. Reese UT Dr. Parker)	WESLIB LMVD	713-F3-R0-014	Honeywell G-635 TSS FORTRAN	X		Analysis of group pile behavior by finite difference University of Texas.
PX4C3 *	(Dr. Reese UT Dr. Coyle TAM)	WESLIB LMVD	713-F3-R0-015	G-600 TSS FORTRAN	X		Load-settlement characteristic of axially loaded piles, University of Texas.
MAKE *	(Dr. Parker) Radhakrishnan	WESLIB LMVD	713-F3-R0-016	G-600 TSS FORTRAN	X		Generates pressure vs movement curves for piles in sand or clay.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
MOMENT	Wayne Jones WES		713-F3-R0-024	G-600 Batch FORTRAN	X		Computes moments, shears, and thrusts for a rectangular section of finite elements from the stress output of a FEM code.
BEAMHBW*	H. B. Wilson University of Alabama	CORPS	713-F3-R0-025	G-635 Batch	X		General purpose continuous beam analysis. Multiple span, variable section properties, point and trapezoidal loads. Plots shear moment, slope, and deflection on terminal printer.
FESS41**	Radhakrishnan WES	ECPL LMVD WESLIB	713-F3-R010A	600 TSS Batch	X		Finite element method is used to compute stresses and deformations in clay masses in plane strain geometry. Program takes into account nonlinear behavior of soil systems.

* Recommended.
** Also available from Huntington District.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FESS412	Radhakrishnan WES	WESLIB	713-F3-R010B	G-635 Batch	X		Stresses and deformations in soil masses in axisymmetric plane strain geometry. Soil system nonlinearity included via incremental/iterative modeling from non-linear stress strain data fitted in a hyperbolic form for both the shear modulus and Poisson's ratio.
COGO	William Price WES	WESLIB	713-F3R0-001	G-635 TSS	X		Coordinate geometry, includes horizontal and vertical curves, no spirals. Traverse adjustment included. Interactive or data file.
H K PILE (H PILE-REV PROGRAM)	H. W. Heslin, Jr. Dani Ragsdale	RAMUS	741-F5-R0-002 (41-Z5-002)	Honeywell G-635 TSS FORTRAN	X		Pile foundation analysis using Hrennikoff's Method.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
A COMPUTER PROGRAM FOR LOCK CULVERT FRAME ANALYSIS (CULVERT)	Paul K. Senter & Fred T. Tracy WES	WESLIB	713-F3-R0-017	G-635 TSS, Batch FORTRAN	X		This program was developed to calculate the shears and moments at the joints of the frame encompassing the side culvert in a lock wall. Some of the features of the program are: (1) the lock culvert is composed of four members, (2) the frame is subjected to four types.
LOCK CULVERT FRAME ANALYSIS WITH INTERACTIVE GRAPHICS (GCULVERT)	Robert Hall WES		713-F3-R0-A17	G-635 TSS FORTRAN	X		This program allows the user to define, display, and edit the data necessary to define a lock's wall geometry and loads. The program will analyze a frame around the lock culvert and display the moment and shears.
COM62 *	(Dr. Reese UT) Radhakrishnan	WESLIB LMVD	713-F3-R0-018	600 TSS	X		Analysis of piles with lateral and axial loads-University of Texas.

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
COMPUTER- AIDED DESIGN OF HORIZONTALLY FRAMED MITER GATES (MITER)	William Boyt WES	WESLIB ECPL	713-F3-R0-020	G-635 TSS FORTRAN	X		The program MITER was developed for the computer-aided design of horizontally framed miter gates with a miter of 1 on 3.
(TGDA) COMPUTER-AIDED DESIGN/ANALYSIS OF TAINTER GATES	W. A. Price WES		713-F3-R0-022	Honeywell G-635 TSS FORTRAN	X		A comprehensive program to do the engineer's routine work, code checking, member selection, and calculations.
STRUPUT	Robert Hall WES		713-F3-R0-023	Honeywell G-635 TSS FORTRAN	X		This program allows the user to build and/or display a planar rigid frame's geometry and loading cases before the analysis. After the analysis, the user can obtain moment and shear diagrams plus a plot of the deformed shape in addition to tables of moment, shear joint displacement, and reactions.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
HPILE	Vicksburg District		741-F5-R0-002	G-635 TSS		X	Two-dimension pile program utilizing Hrennikoff's method of analysis. Same as documented WES program HKPILE except data input from file. Unlike program HKPILE which prints out pile geometry each time a case analyzed in a "multi-case run, HPILE prints out geometry only once. These revisions greatly expediate analyses.
HOBCUR	D. K. Butler WES			IBM 7094 CDC 6400 Batch TSS	X		Numerical approximations to the height of burst curves for nuclear explosions. Computes height of burst, ground range, overpressure for any yield.
PLATSL	D. K. Butler WES			IBM 7094 CDC 6400 GE-635 TSS	X		Solves the shock propagation and attenuation problem of a plate of arbitrary thickness impacting a simi-infinite target by method of characteristics.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
WAVE-L	D. K. Butler WES			CDC 7600	X		A large, multipurpose, Lagrangian, explicit, finite difference code for the solution of problems in continuum mechanics. Can be used in a deformable or rigid body mode for the analysis of projectile penetration into earth media.
PENCO	D. C. Creighton WES			G-635 TSS		X	Analyzes normal impact penetration in homogeneous and layered targets by rigid projectiles.
OBLIQUE	D. C. Creighton WES			G-635 TSS		X	Analyzes rigid projectile loading and rotation for oblique impact into homogeneous target up to full embedment of nose.
CREEP	John O. Curtis WES			CDC 6400 Batch		X	CREEP is a finite element code used to solve time dependent boundary value problems where increments of permanent deformation are described by a CREEP law.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
AXISYM	D. M. Holloway WES			600 Batch	X		Axisymmetric finite element code verified for analysis of one pile-soil interaction problem.
SAPPILE	H. W. Jones WES	LMVD		G-635 Batch	X		A modified general purpose structural analysis program (SAP4) with a three-dimensional pile element added: Good for analysis of 3-D flexible cap pile foundations.
PRESAP	H. W. Jones WES	LMVD		G-635TSS	X		An interactive time-sharing program to generate data for the General Purpose Structural Analysis Program (SAP4).
STAB *	Edward O'Neil WES	CORPS		HONEYWELL G-635 TSS FORTRAN			

* Recommended.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
PREFEM	Fred Tracy WES CAB, ADPC	**WESLIB**		G-635 TSS Interactive Graphics	X		An interactive graphics program for automatically generating finite element grids and on-line data editing and numberings. Pre-processor finite element program.
POSTFEM	Fred Tracy WES CAB, ADPC	**WESLIB**		G-635 TSS Interactive Graphics	X		An interactive graphics program for proof-processing finite element data. Programs can generate contour plots, vector plots, isometric and perspective plots.
WESTES	N. Radhakrishnan WES Rev. by: John O. Curtis, WESSD			GE-635 Batch	X		WESTES is a static, axisymmetric finite element code that was developed to simulate uniaxial and triaxial laboratory tests. An incrementally elastic, non-linear constitutive model called the variable moduli model is used. WESTES has also been applied to borehole pressuremeter simulations.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
DUFE	Jesse Kirkland & Robert Walker, WEL			G-600 Batch CDC 7600		X	Finite element explicit time-marching wave propogation code. Solves axisymmetric problems using nonlinear material properties.
DUFEC	Robert Walker and Jesse Kirkland/ Modified by George Baladi WES			G-600 Batch		X	DUFEC is a dynamic axisymmetric small strain finite element computer code which utilizes an explicit integration scheme, and a plastic cap material model.
STATIC	Jesse Kirkland & Robert Walker, WEL					X	Static finite element analysis of axisymmetric and planar problems using nonlinear material properties.
3-D EDIT	Fred Tracy WES,	WESLIB		G-635 Batch	X		3-D edit program for the finite element program.
HIDDEN	Fred Tracy WES,	WESLIB		G-635 Batch	X		Solves the 3-D hidden surface algorithm.

PROGRAMS FROM OTHER SOURCES

LIST OF PROGRAMS IN STRUCTURAL ENGINEERING

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
PLASANS	Jim Hill, UA Dani Ragsdale WES			UNIVAC 1108		X	2-D static plane finite element code. Uses triangular element only and uses non-linear geometric and non-linear material properties.
PLADANS	Jim Hill, UA Dani Ragsdale WES			UNIVAC 1108		X	2-D dynamic plane finite element code. Uses triangular element only and uses non-linear material properties. Employs an implicit time marching scheme.
AISCB (Program in progress)	American Institute of Steel Construction Dani Ragsdale, WES	WESLIB		G-635 TSS	X		"Computer Program for Steel Beam, Girder and Floor Graming Design."
AISCC (Program in progress)	American Institute of Steel Construction Dani Ragsdale, WES	WESLIB		G-635 TSS	X		"Computer Program for Steel Column Design."
NOFEAR	Ed. Wilson, UC Dani Ragsdale, WES			600 Batch	X		Finite element implicit time marching wave propogation code. Solves axisymmetric problems using non-linear material.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
FEAR	Ed. Wilson, UC Dani Ragsdale WES			G-600 Batch	X		Finite element implicit time marching wave propogation code. Solves axisymmetric problems using nonlinear material properties.
NON-SAP	Klaus-Jurgon Bathe Edward L. Wilson Robert H. Iding Univ of CA, Berkeley Bill Boyt, WES			CDC 6400 Batch	X		A structural analysis program for static and dynamic response of non-linear systems.
CHEVRON	Chevron Oil Co. H. R. Austin WES			Honeywell G-635 Batch FORTRAN	X		Computes closed form solution of stresses, strains and displacements of elastic multilayered soil systems.
PLAXLY	J. Lysmer Univ of CA, Berkeley R. A. Weiss & H. R. Austin S&P Laboratory, WES			CDC		X	Finite element program which calculates the dynamic response of a layered elastic half-space to an applied dynamic loading.
DUKEFOR	Duke University D. M. Holloway WES			600 Batch	X		1D finite element simulation of pile driving and load testing behavior.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
BRIDGE ANALYSIS PACKAGE 1 (Program in progress)	General Electric Company/Dani Ragsdale, WES		713-G1-74-24A	G-635	X		Computer ordinates and stress on continuous beams.
BRIDGE ANALYSIS PACKAGE 2 (program in progress)	General Electric Company Dani Ragsdale, WES		713-G1-74-31A	G-635	X		Non-composite or composite steel girder analysis.
BRIDGE ANALYSIS PACKAGE 3 (Program in progress)	General Electric Company Dani Ragsdale, WES		713-G1-74-22B	G-635	X		Continuous highway girder analysis.
RETAINING WALL DESIGN *	General Electric Dani Ragsdale WES		CD225-P2.012	GE 400/600 Batch FORTRAN	X		Accomplishes one of three (3) separate functions. (1). Design of a cantilever retaining wall. (2). Analyzes a given cantilever wall. (3). Produces an analysis of a gravity retaining wall.
CONTINUOUS GIRDER (GIRDER)	General Electric Paul Senter, WES James C. Irwin North Atlantic Div.	WESLIB		Honeywell G-400/600/6000 Batch and G-635 TSS, FORTRAN			Load Analysis Program. Girder provides an analysis of the loading (reactions, shears, bending moments) in continuous girder up to spans using least work.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER--OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
COMPOSITE BEAM ANALYSIS	General Electric Dr. Radhakrishnan WES	WESLIB	CD600P2.007	G-600 TSS	X		Program to Compute Beam Moments and Deflections. This program computes moments and deflections in a singlespan variable depth beam carrying concentrated and distributed loads. The end deflections are zero. The remaining conditions can involve zero slope or zero moment.
THE ANALYSIS OF CONTINUOUS BEAMS FOR HIGHWAY BRIDGES IV	Glenn Sikes State of Georgia Highway Dept. #2 Capitol Square Atlanta, GA 30334 656-5280/William S. Morris - KCD			IBM 360/50 CDC 7600 Batch FORTRAN IV	X		This program performs the complete analysis of a continuous beam for a highway bridge and reports the moments, shears and stresses, reaction, reflections, and shear connector spacings produced by the dead loads and standard Highway live loads.
SP STRESS	Massachusetts Institute of Technology/Little Rock District.		16	CDC 6000 TSS FORTRAN	X		Uses stiffness method for solving 2- or 3-dimensional elastic statically loaded structures using pinned or rigid joints.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
STRESS	Massachusetts Institute of Tech. Dr. Radhakrishnan WES	HONEYWELL		G-600 Batch FORTRAN	X		Structural Engineering System Solver. Performs linear analysis of elastic statically loaded framed structures
PCABR	Portland Cement Association program William Ashton Rock Island District	WESLIB		G-635 TSS Batch INFONET UNIVAC 1108	X		"Analysis and Design of Simple-Span Precase, Prestressed Highway or Railway Bridges." Uses 1968 AASHTO or AREA specifications.
PCAUC	Portland Cement Association program	WESLIB		G-635 TSS	X		"Ultimate Strength Design of Reinforced Concrete Columns."
PCA	Portland Cement Association H. R. Austin WES			G-600 TSS	X		Program solves Westergaard equation of bonding for thin slab on a Winkler foundation interion load case.Computes block count (Pickett and Ray Chart No. 4) and stress.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
H51	Portland Cement Association H. R. Austin WES				X		A computerized analysis for graphical solution of Westergaard equation of bending for thin slabs on a Winkler foundation (Edge Load Case). Computes block count (Pickett and Ray influence Chart No. 6) bending moment and stress at slab edge in a direction parallel to edge.
HONDO	Samuel W. Key Sandia Laboratory Rev. by: John O. Curtis, WES			Honeywell GE-635 Batch	X		HONDO is a finite element code used to calculate the large deformation dynamic response of axisymmetric solids. Several constitutive models are available including a nonlinear elastic, non-ideally plastic cap model.
SHELL	Shell Oil Co. H. R. Austin WES			Honeywell G-635 Batch FORTRAN	X		Computes closed form solution of stresses, strains and displacements of elastic multi-layered soil systems.

PROGRAM NAME	AUTHOR/CONTACT OFFICE	LIBRARY	PROGRAM NUMBER-- OCE CATEGORY	COMPUTER/ MODE	DOCUMENTED YES	DOCUMENTED NO	DESCRIPTION
TAMFOR	Texas A&M University D. M. Holloway WES			G-600 TSS FORTRAN	X		Pile driving analysis by the wave equation lumped parameter finite difference method.
BMCOL	(Prof. Matlock /UT) N. Radhakrishnan WES			G-600 TSS FORTRAN	X		Finite difference program to solve a variety of simple a complex beam-column structural problems accounting for movable loads - University of Texas.
BMCOL 4	(Prof. Matlock /UT) Robert Fleming Vicksburg District			GE-225 Batch	X		Linear finite difference program to solve a variety of single and complex beam-column structure problems (UT).
SLAB30	U. of Texas H. R. Austin WES			G-600 *Batch*	X		A finite difference solutions for equations of binding for thin slabs on a Winkler foundation. Computes deflections, moments, shears, and stresses.
ZIENK	O. C. Zienkiewicz Y. K. Cheung John Curtis WES			IBM 360 Batch	X		Small FEM program from "The Finite Element method in Engineering Science" by O. C. Zienkiewicz.

In accordance with ER 70-2-3, paragraph 6c(1)(b), dated 15 February 1973, a facsimile catalog card in Library of Congress format is reproduced below.

Corps-Wide Conference on Computer-Aided Design in Structural Engineering, New Orleans, La., 1975.
[Proceedings ... held in New Orleans, Louisiana, 22-26 September 1975] Vicksburg, Miss., Automatic Data Processing Center, U. S. Army Engineer Waterways Experiment Station, 1976-
12 v. illus. 27 cm.
Contents.-v.1. Management report.-v.2. List of computer programs for CADSE.-v.3. Invited speeches and technical presentations.-v.4. Division presentations.-v.5. State-of-the-Corps-Art (SOCA) reports on gravity monoliths, U-frame locks, and channels.-v.6. SOCA reports on gates, stoplogs, and trashracks.-v.7. SOCA reports on single- and multiple-cell conduits and tunnels.-v.8. SOCA reports on pile foundations and sheet pile cells.-v.9. SOCA reports on sheet pile walls and T-walls.-v.10. SOCA reports on stiffness methods, frames, and military construction.-v.11. SOCA reports on earthquake and dynamic analyses.-v.12. Interactive graphics, SEARCH and CORPS systems.

(Continued on next card)

Corps-Wide Conference on Computer-Aided Design in Structural Engineering, New Orleans, La., 1975.
[Proceedings ...] 1976-
(Card 2)

1. Computer-aided design -- Congresses. 2. Design -- Congresses. 3. Structural engineering -- Congresses. I. U. S. Army. Corps of Engineers. II. U. S. Waterways Experiment Station, Vicksburg, Miss.
TA641.C67 1975